

Negative Effects caused by COVID-19 on Critical Path of Construction Projects

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Abstract. Begun in 2020 COVID-19 disease spread all over the globe and negatively affected all areas of human activities and societies inclusive engineering and construction projects. This paper analyses how COVID-19 implications can be used as a general excuse by a construction company to relief from contractual obligations, e.g., liquidated damages. To answer this question, we compared existing case law, previous court decision and project management literature with potential global and force majeure arguments based on COVID-19 cases. Our results showed that a general “free out of jail” card using COVID-19 argument is not applicable and COVID-19 cannot be seen per se as a force majeure in general and for every situation. However, if the effects from COVID-19 implications are beyond the parties’ control and evidence shows that the contractor is actually disrupted and severely delayed the contractor is entitled for an extension of time or a delayed delivery of his performances. The paper concludes among other details that a COVID-19 argument can only be based on existing contractual provisions, accurate records of the as-built situation, proper notices of all kind of impacts and cause-and-effect considerations. Despite of any warning and if a contractor decides to rely on a global COVID-19 argument only it is a very risky endeavor and may backfire on him later on.

1 Introduction

The outbreak of COVID-19 disease officially announced by WHO on March 11th 2020 negatively affected engineering and construction projects around the globe as much as it affected the societies in different ways and magnitudes. Labor and skilled worker shortages due to travel bans and temporarily or permanent self-isolations reduces the ability for a return to the engineering and construction projects and therefore created disruptions and delays to deliver the project in time to a certain extent.

The same effect happened to the interrupted supply chain for construction materials, plants and equipment is relevant for the progress of construction project, which stuck either due to closed country borders or due to a lockdown of established transportation and traffic routes. All of those shortages of labor and goods in general slowed or even stopped the progress and timely performance of a contractor while the contractor may bar and tight up to a concrete and fixed delivery time for the project and liability for delays associated with a contractual liquidated damage provision.

That creates a problem for contractors, but finally as well for the clients, owners, all other subcontractors and the society involved in the same engineering and construction project. The goal of this paper is to assess and verify whether a contractor affected by COVID-19 implications can be relieved of contractual obligations, e.g., liquidated damages and can use contractual Force Majeure or other excusable disruption and delay provisions to seek for an extension of time (EOT) and additional compensation for such disruptions and delays. The proof of cause by COVID-19 and its direct effect on the contractor programme is important and a precondition to successfully place and being paid for a disruption or a delay claim. Further, it is mandatory that COVID-19 implications can be distinguished into excusable or inexcusable reasons for disruptions and delays.

In addition, if the contractor cannot deliver interim or final project milestones the contractor is not able to achieve interim or milestone payments or maintain sufficient cash flow. Ultimately, the

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contractor's ability to perform and progress will be restricted or even collapse as he might not be possible to issue and submit pro-rata invoices for his performances and run out of liquidity to run his overall business.

That is the reason why this paper and its outcome matters to construction projects.

2 Relevant Background Knowledge of COVID-19 Implications on Construction Projects

Without doubt events to cause delays and disruption often if not always happens to any small, middle or large-scale construction project worldwide. Events for such delays and disruption have different nature and associated with different circumstances, e.g., disorganization or mismanaging of a party, wrong or late or even no design, late procurement, wrong plant or machinery, wrong skills of labor, miscalculation of the construction sequence etc. Most of such incidents can be seen as "internal" causes with the contractor responsibility for delays and disruption. This paper seeks to list and identify related issues to frame the COVID-19 implications and the delay and disruptions effects on construction projects hereafter. [1-3] COVID-19 as a virus can be seen as an "external" cause for delays and disruptions.

2.1 The Problem

An essential element of a construction projects is the time to deliver the project. With time in global it is meant the duration of individual or numerous activities in sequence and/or one specific date to hand over or to bring the project into a stage where an owner or a client can take over or use the project for his purposes.

Very often "time is of the essence"-clauses or alterations of it are very common in construction contracts. By use of "time is of the essence"-clauses in general it is described that duration of activities and/or start or interim or death lines and substantial completion to specific dates are of the parties most interests. "The time is of the essence"-clause could also be seen as contractual obligation of the parties involved and even more, the contractor fails to complete in time it is seen as a material breach of contract.

If the contractor fails to deliver such project or substantial completion in time and to a specific date, the contractor is exposed to (but not limited to) such delay effects:

- damages at large respectively liquidated damages,
- further contractual and legal consequences,
- disputes,
- loss of reputation,
- arbitration,
- proceedings.

Another essential element of construction project are contracts associated with a lump sum prices for the works. In other words, the price is fixed according to works specified in the tender and procurement stage or bill of quantities (BOQ). In combination with a fixed end date to deliver a project the contractor is exposed to a high level of risk by the means of the contract. The contractor has to manage and control the risk in relation to time and works. Works can also be seen as equivalent of money spent for the works carried out, e.g., labor, material, equipment, plant etc. and quality of the works, e.g., quality of the material etc. delivered.

2.2 The Research Question (simplified)

As COVID-19 is a worldwide pandemic with effects to almost all of any aspect of the society we derivate the following research question:

- Can a contractor affected by COVID-19 implications be relieved of death lines and associated liquidated damages and/or other delay effects?
- Can a contractor use contractual Force Majeure or other excusable disruption and delay provisions associated with COVID-19 to seek for an extension of time (EOT)?
- Can a contractor seek for additional compensation for such disruptions and delays caused by COVID-19?

2.3 Examples of Contract Clauses dealing with Time

In almost all of the construction projects and if a contract is in place, contract clauses are dealing with time in large or specifically. Beside dates of the commencement or the sign off of the contract agreement itself, the start of the project activities, the duration of one or more project activities and/or end date to occupy or utilize the project we can find additional contract provisions as follows (but not limited to):

- Construction Change Directives
- Emergencies
- Safety of Persons and Property
- Suspension by the Owner-for Convenience
- Termination by the Owner of Convenience
- Evidence of the Owner's Financial Arrangements
- Change Orders, e.g., Design, Extensions, Upgrades, Adjustments etc.
- Adjustments for Changes in Legislation
- Delays caused by Others
- Delays caused by Authorities
- Delays and Extensions of Time (i.e., Impossibility of Performance, Force Majeure, Act of God).

The list is not comprehensive but frames the battery limits to contractual provisions where time is or can be a matter to deal with from the parties involved. In the light of COVID-19, one of the potential contractual provisions that a contractor may call to apply for an EOT is Force Majeure or similar provisions like Act of God. As any of the aforementioned contractual provisions implies different legal and contractual consequences, we need to explore more on the disruption or delay matter hereinafter.

2.4 Disruption vs Delay

Disruption and delay are not the same. Both events can concur the same time or each after another or independently from the other. Disruption and/or delay are not a prerequisite for the other.

Delay is an event when the as-build performance or end date of project delivery is extended or prolonged compare to the original as-planned programme or schedule (timely as-build-situation does not meet as planned programme). Delays coming always with an overrun of costs or budget of one or more parties in comparison what was planned and bid associated with the question if those costs are compensable from either party to the other party. Throughout the research for this paper and under consideration of the authors' experience in this field it becomes obvious the construction and project management industry by use of the term delay implies that those delays are critical for the overall project completion. Interim delays or challenges with minor subsequent delays are not meant as critical if lost time can be regained or does not have an effect for an EOT or a prolongation of the overall project completion date. Missing the overall project completion date and responsible for those delays associated with a contractual LD provision ultimately leads to the damage for the delaying party.

Disruption is an event that finishes the project on time, but created an overrun of the original budget cost in comparison what was planned and bid (timely as-build-situation does meet as-planned-programme). Disruptions are very often used in different terms and KPI's, e.g., loss of productivity of labor and equipment and/or inefficiency occurred in conjunction with measured lower production rate of works completed within a certain time window. Those effects can be assessed as damages for the parties. Generally speaking, disruption can be measured by metrics or units where labor is converted to cost and further those costs are associated with a certain amount of work completed in a certain time window. Typical examples to measure assess and identify losses and inefficiencies are

- Less performances of cubic meters of pouring concrete per hour, shift or day or
- Fewer square meters of laying bricks of a certain wall thickness of e.g., 24cm or 36.5cm of masonry blocks.

The question whether a contractor is entitled to receive a compensation of such losses and inefficiencies relies on the root causes of the events of disruption, the proof of it as well on the contractual provisions.

2.5 Disruption

Disruption can be categorized into two major groups:

- Loss productivity of labor [4] respectively equipment and
- Inefficiency occurred in conjunction with measured lower production rate of works completed within a certain time window.

Examples for disruption are (but not limited to): [5]

- | | |
|--|---|
| <ul style="list-style-type: none"> • Absenteeism • Acceleration • Beneficial or joint occupancy • Bid error • Crowding • Defects with different causes, e.g., fabrication, design, transportation etc. • Defective plans and specifications • Dilution of supervision • Extended overtime • Fatigue • Higher quality standards • Idle time due to bad or severe weather • Inadequate labor pool • Inexperienced personnel • Insufficient equipment • Labor relations • Labor strikes • Labor turnover • Lack of coordination • Lack of protection from elements • Late deliveries of material, plant, equipment, design, construction plans, and information required for permits, construction drawings, specifications etc. • Learning curve • Limited site access • Manpower changes • Materials, tools, equipment shortages | <ul style="list-style-type: none"> • Multiple shifts • Numerous changes with start-stop-effects • Out-of-sequence work and additional work orders • Over-inspection • Overmanning • Performing field work planned for shop • Poor morale and lack of motivation • Project Management factors (tactical or strategical nature) • Rework and errors • Schedule compression • Seasonal weather conditions • Shift work • Simultaneous operations • Site conditions • Skill dilution • Slow response on requests for information • Suspended work • Trade stacking • Underbidding work • Undermanning • Unusually severe respectively unfavorable weather • Work restrictions |
|--|---|

2.6 Delay

On high-level, delays can be categorized into five major groups:

- Excusable Delays (“ED”): [5]
 - Beyond the control of Client and Contractor, e.g., Force Majeure (see below) etc.
 - In general, entitlement to Extension of Time (EOT), but not to additional reimbursement.
- Non-excusable Delays (“NE”): [5]
 - Contractors’ responsibility, therefore no relief of contractual obligation, e.g., shortage of material, plants and labor, breakdown of equipment & plants, accidents, loss of own productivity, discoordination, lack of management etc.
 - No entitlement for Extension of Time (EOT) and not additional reimbursement.
- Compensable Delays (“CD”): [5]
 - Clients’ responsibility, therefore relief of contractual obligations, e.g., access to construction site, clients permit, mismanagement of client, inaction, no decision of client, non-Collaboration by the customer, late approval, changes of clients, reworks in design and already executed works, soil risks, differing site conditions etc.
 - Entitlement for Extension of Time (EOT) and additional reimbursement based on proof and evidential facts.
- Concurrent Delays: [5, 6]
 - Two or more delays occur at the same time and delaying the construction project.

- Concurrent delay comes often in combination of various delay types.
- Difficulties are
 - to distinguish to whom a delay is objective and finally attributable;
 - to which extent and affect a delay grows on later;
 - fragments of delays are apportioned to different causes, various parties and different events, which then later is or is not compensable.
- Critical respectively Non-Critical Delays: [6, 7]
 - Critical Delays:
 - At large and in simplified words critical delays on a construction project extend the overall or final date of the expected completion for the parties involved or by using, any other contractual definition where the parties believed is the date of being “substantial” finished and the “project” can come in use or operation.
 - Per definition, a critical delay massively modifies and changes mainly negatively the overall or final completion date and lies on the critical path and is therefore itself a critical path activity. The term critical path will be explained later in this document.
 - A critical delay consists of a scope of work or an activity of work which is mandatory for the project to continue and to deliver but cannot be skipped or waived “off the (project) table”. This scope of work or activity of works requires time by nature to solve the technological constraints which the project does not have.
 - A critical delay always hurts in terms of time, money and quality or in combination of it. A critical delay cannot be discussed away or be ignored or forgotten. A critical delay has at least a temporary negatively sometimes permanently negatively consequence of the entire project completion. No doubts, if a critical delay cannot be recovered or eliminated the success of the construction project is in danger or even can be the cause of a ruined project.
 - Non-Critical Delays:
 - In simplified words, non-critical delays are delays with are of the opposite of the aforementioned definition for critical delays.
 - Non-critical delays consist of scope of work or one or more activities of work, which is not on the recent critical path.
 - Per definition a non-critical delay does not modify and change the overall or final completion date yet and does not lie on the critical path and is therefore itself a non-critical path activity. The term critical path will be explained later in this document.
 - The deceptive challenge to understand non-critical delays is that those delays still have the potential for delay damages once their negative effect radiate to the completion date. In addition, and over the course of a construction project previously former non-critical delays may leap up on the critical path and therefore grow to critical delays per definition. Suddenly low risk elements and non-critical delays turns in harmful critical delays for construction projects.

2.7 Overview of specific Terms and their Definitions in Relation to COVID-19 Implications

As previously listed different types of delay and disruption may affect the completion date of a construction project. Although construction projects are always unique and specific the individual area, environment, society and time-budget constraints in the relation between the contractor and client, if we want to clear sight and focus what COVID-19 brought to construction, in sum the following set of main root causes can be assessed:

- Impossibility of Performance:
 - An event which made performance for a contractor impossible, e.g., governmental shutdown or without any alternative options, but exhaust any of reasonable measures for performance, e.g.
 - Specific level of skilled labor needed.
 - Limited contractor in venue of construction project available.
 - Shortage of skilled labor in conjunction of the needed numbers of contractor.

- Impossibility of Performance shifts the completion date of the contractor. Difficulties for this argument is whether the event for Impossibility of Performance was objectively unexpected. The following key questions needs to be considered.
 - Before February 2020 COVID-19 and its magnitude was not expected.
 - Courts may rule COVID-19 as pandemic at this magnitude was not expected.
 - Future construction contracts should specifically describe COVID-19 affects resp. pandemic in general.
- Force Majeure:
 - Force Majeure means an exceptional event or circumstance (based on FIDIC Fédération Internationale des Ingénieurs Conseils > other construction contracts may use similar definitions);
 - which is beyond a Party's control (one or the other);
 - which such Party could no reasonably have provided against before entering into the Contract (one or the other);
 - which having arisen, such Party could not reasonably have avoided overcome (one or the other);
 - which is not substantially attributable to one or the other Party;
 - e.g., hurricane, earthquake, volcanic activity, floods, storms, societal or governmental actions, war, invasion, strikes, civil unrest, war, hostilities, invasion, act of foreign enemies, rebellion, terrorism, revolution, contamination by radio-activity (list is not comprehensive);
 - New COVID-19 considerations: epidemics, pandemics, quarantines, preventive health protection. [8]
- Act of God: [5]
 - Act of God has a similar but at the same time different logic as for the term Force Majeure, but mainly focus on unexpected, unique and extraordinary force of nature. While e.g., rain, heavy rain and snow blizzards can be regularly assessed as events with comes with certainty or expected frequencies if those events led and result to shear failures of soil, flooding at large or large rock falls such consequences may be deemed as Act of God. Similarities to Force Majeure are applicable, e.g.;
 - which is beyond a Party's control (one or the other);
 - which such Party could no reasonably have provided against before entering into the Contract (one or the other);
 - which having arisen, such Party could not reasonably have avoided overcome (one or the other);
 - which is not substantially attributable to one or the other Party;
 - beyond a Party's control (one or the other).

2.8 The Critical Path (CP)

Understanding of the CP and alterations of the CP are essential and the only objective way to determine if a delay or disruption event really occurred to the construction project and its schedule and ultimately led to contractual and legal consequences.

The importance of the understanding of the CP led further to the understanding of the concept of Critical Path Methodology (CPM). [9] CPM is every time applied if a delay and disruption analysis is required and/or at least one (1) party seeks to be compensated from the other parties, which denies the existing delays and disruptions events. CPM is mainly carried out by appropriate programming called Program Evaluation Review Techniques (PERT) and supported by standard software applications. Although those mechanisms are mature disciplines, experience of the professionals and experts in this field is much more crucial. Finally, the outcome of CPM is assessed by those experts and the input data are interpreted differently. Common sense shall be applied, but facts and evidence viewed from a different angle may produce different results. Hence, the outcome of a proper and accurate executed CPM may vary from expert to expert and from case to case. This is no surprise as it reflects life experience from other fields.

CP per definition is the longest continuous sequence of activities through the entire construction project. The CP therefore connects the Start and End Date directly. At the same time and as those sequence of activities has no individual time buffer or float left, a delay or disruption has a direct impact, mainly negative, to the completion date of a construction project. In other words, any minor or larger alteration of the CP will change the entire project in the same affect. The project permanently breathes along the CP.

Over the course of a construction project, the CP may change through the sequences of activities as well. The CP can hop on or off of different set of activities and also switch by looking at different time windows. CP is dynamic and requires constant monitoring and control for the greater good of all stakeholders of a construction project.

CPM, Delay, and disruption analysis methods needs to the best-in-class methodology to prove or disprove delay and disruption claims and their delay and disruption damages, e.g. (but not limited): [9, 10]

- Formatting Impacted as-planned
- Time impact analysis
- Time slice windows analysis
- As-planned versus as-built windows analysis
- Retrospective longest path analysis
- Collapsed as-built analysis
- Equivalence method by Gutsche
- Construction process model by Toffel
- Approach by Thode
- Multi-stage approach by Lang
- Entitlement determination by Heilfort

The differences of each of aforementioned CPM's are not forming part of the conclusion of this research paper, but should once more emphasize the complexity of the assessment of CPM once delays and disruptions occur.

Again, a construction project is a complex and complicated integrated endeavor with thousands of thousands of construction activities, which are interconnected. Which CPM is finally chosen depends on numerous matters, for instant contract provisions, proceedings and formal agreed set up within arbitration and litigation, level of records, whether the analysis shall be prospective (looking in the future) or retrospective (looking the historic) and documentation and expert evaluation of the use of CPM.

Upon the execution of sophisticated and mainly cost intensive, CPM has to be discussed and agreed by the involved parties. Otherwise, the parties fail to finally agree on the outcome of the assessment of such CPM. This requires time and the involvement of experts in that field. [11]

2.9 COVID-19 hypothetical Case Study

For the purpose of clarity, a hypothetical Case Study with illustrations were rendered, compiled and simulated to demonstrate the negative effects by COVID-19 implications on the critical path of construction project by use of Program Evaluation Review Techniques (PERT).

The Case Study start to show the as-planned programme first as arrow diagram and then translated into a bar chart format for clarity. This is also known as the baseline schedule which best represents how the contractor intends to carry out the scope of work based on the contractual provisions and technological project specific. Baseline schedule mainly exchanged during the procurement process of the parties and undergo various updates and changes before sign off the contract.

Afterwards a COVID-19 delay respectively disruption element was inserted on and beside the critical path activities to show the effect on the completion date.

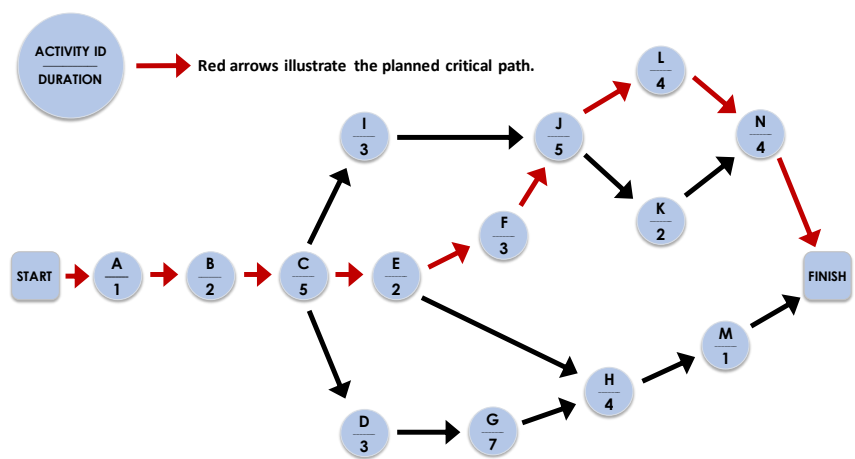


Fig. 1. Arrow Diagram of the as-planned Critical Path of the case-study project

Figure 1 shows numerous construction activities (A to M) and a definite start and finish milestones of the hypothetical case-study project. Each of the activities comes with a definite as-planned duration (shown in the denominator of the activity ID text field). Unit of duration could hours (h), days (d), weeks (w), months (m) or any other unit specified for construction project. For the ease of this paper, we use the term “time unit”.

Red arrows illustrate the planned critical path where as black arrows represents planned non-critical path activities of the hypothetical case-study project. Those non-critical activities lying beside the critical path activities.

Based on the programme of the hypothetical case-study project the total project duration is twenty-six (26) time units and the critical paths runs through activities with ID numbers A, B, C, E, F, J, L and N.

Translated into more familiar chart techniques and network schedule of the same hypothetical case-study project the bar chart looks like:

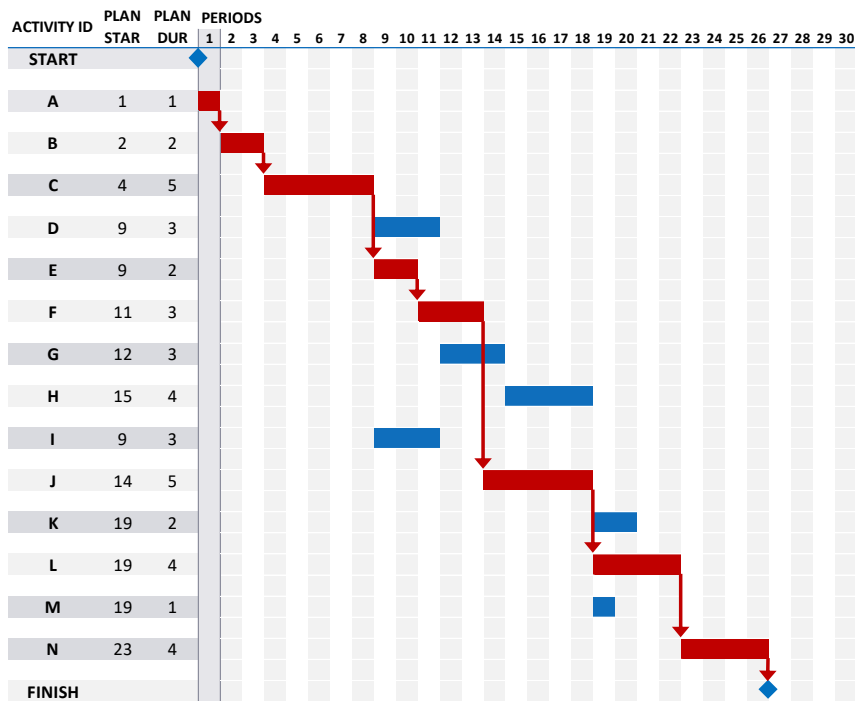


Fig. 2. Bar Chart of the as-planned Critical Path of the case study project

Figure 2 shows a bar chart exactly the same logic and intelligence of the hypothetical case study like in the aforementioned arrow diagram Figure 1, but with more clarity to understand.

For the exercise of this paper, we insert now a COVID-19 delay and disruption element and name it with activity ID “O” and an assumed duration of three (3) time units. The new bar chart of the hypothetical case study looks like:

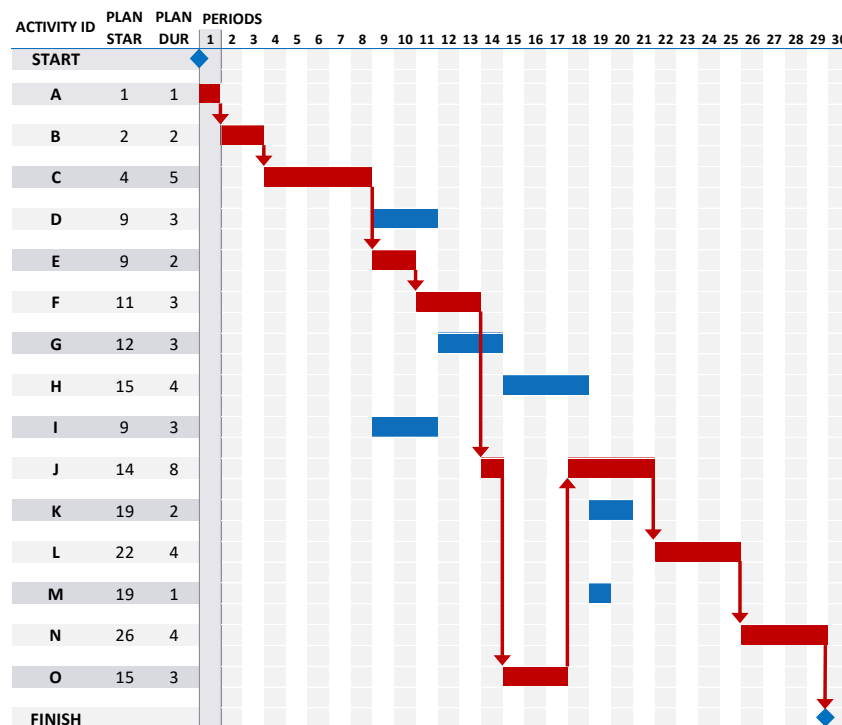


Fig. 3. Bar Chart with COVID-19 delay effect (activity ID “O”) of the case study project

Figure 3 shows the new programme of the hypothetical case study delayed and disrupted by COVID-19 with activity ID “O” and its related duration of additional three (3) time units. The total project duration is now twenty-nine (29) days and the critical paths runs through activities with ID numbers A, B, C, E, F, J, O (the COVID-19 delay and disruption), back on J, L and N. Hence, the COVID-19 delay and disruption activity ID “O” shifted the as-planned completion date of additional three (3) time units. The non-critical activities lying beside the critical path activities are not yet affected by the COVID-19 delay and disruption activity ID “O”.

As the effect of COVID-19 hits the entire construction world at once and without change for preparation, the outcome the research questions raised in this paper is relevant for all stakeholders involved in construction projects.

2.10 Case Law and Court Decisions

In the absence of recent High Supreme Court Verdicts in relation to delay and disruption claims caused by COVID-19 we have to assess the recent status:

- Knowledge and competence how to deal with delays and disruption in construction projects are driven purely by facts and applicable law (contract law, civil code). Recent case law and High Supreme Courts Verdicts dealing with delay and disruption claims and the appropriate use of the “correct” analysis methods set out the frame to assess the current new COVID-19 situation.
- The new experience and aspect with negative impacts caused by the COVID-19 pandemic for the lawmakers, judges, experts, contractors, clients etc. can be simplified framed as follows:
 - apart from a slightly different delay, starting from Wuhan, China, the entire construction world was hit more or less at the same time, but with different magnitude of its consequences;
 - some of the construction project using the same supply chain for labor, material, plants and equipment. One construction project may hit harder by the shortage of this supply chain than other construction projects;

- no preparation time for all involved stakeholder in the worldwide construction industry was given. The same is applicable for all lawmakers, judges, experts, contractors, clients etc. involved;
- COVID-19 pandemic and its knock-on-effect to the societies of the world still continues and still affecting not only the construction world with unknown concrete date once it is over;
- Although different Universities, Faculties and Societies from different countries published specific articles and produced valuable documents in this area [14-16], it seems that the previous high supreme courts dictate and leads the standard needed for the applicable and accurate delay and disruption analysis method and influenced most of the methodology to prove or disprove delay or disruption claims by contractor or client resp. owner.
- In Germany those required standards are associated with the High Supreme Court Verdicts of, e.g. (but not limited):
 - VII ZR 286/84 dated 20.02.1986;
 - VII ZR 245/94 dated 23.05.1996;
 - ZR 185/98 dated 21.10.1999;
 - VII ZR 224/00 dated 21.03.2002;
 - VII ZR 141/03 dated 24.02.2005;
 - ZR 225/03 dated 24.02.2005.
- The same logic and line of arguments of aforementioned High Supreme Court Verdicts from Germany applies more or less in other countries and jurisdictions. Although different countries and jurisdictions weighs and calculate specifics events and their effects in other way, the majority of such very specific alterations can be neglected for the purpose of this paper. In other words, the final decision of a delay and disruption case is based and assessed by reference to common law principles in every jurisdiction.
- The ability of a claiming contractor seeking an extension of time in a construction project by the client is associated to his ability of providing facts and evidence concrete enough to show COVID-19 is objectively affecting the critical path of construction project. Insufficient evidences led always to the situation that the ruling judges do not understand the objective as-built and as-is construction situation.
- Executive Summary:
 - Entitlement under the contract and/or recent changes in regional or federal legislation due to COVID-19 measures has to been demonstrated and recited by the contractor. This is a matter linked to applicable and existing law even if the legislation or regulations changes during COVID-19 period.
 - Burden of proof for any disruptions & delays events and related costs caused by COVID-19 lies on contractor. It is a question of fact and can be supported with proper documentation submitted by the contractor or client resp. owner. The same logic applies for the proof of detailed Quantum resp. damages. [12] This is a matter of contractor's abilities and way of project management or monitoring his activities and events preventing such activities.
 - Cause and Effect [13] has to be in forensic, reasonable and reflect-reality-level ("as-built"). The specific methodology chosen for the disruption and delay analysis and the accurate link that such COVID-19 event had a negative effect on the completion date of the construction project is crucial to proof such negative effects. As construction project are very complex endeavors the proof of cause and effect [13] is of complex nature. Even if the contractor or client were capable to provide a holistic delay analysis, it would be seen as a substantiated, but subjective assertion of one Party. Therefore, this is a matter to involve an independent, but mainly objective expert.
 - The claimant of delay and disruption claim shall deeply prepare and maintain accurate all kind registers that records and supports those delays and disruptions. This comes together with time-stamped photographs, precise written site diaries, supervisions of construction internal and external construction experts with experience in that technical field.
 - The same logic for an extension of time applies for the rules of compensation for such disruption and delay occurred. If extension of time due to COVID-19 reason is grant and gets a contractual and legal merit the claimant may be compensated for some or all damages occurred. However, if the judging court rules the case as Force Majeure and/or as Act of God the claimant, e.g., contractor will be compensated most likely for the loss he or she suffered. It may be seen that it is beyond any party involved and therefor common law principle applies.

3 Conclusion

On first sight, it seems relatively easy for a construction contractor to use COVID-19 implications as an accurate and valid argument to prove disruptions and delays and related costs.

However, this paper shows that COVID-19 per se not Force Majeure. [17 - 23] The contractor should instead carefully examine and assess the contractual provisions linked to the pandemic disease COVID-19 and act accordingly. This includes the provision of proper notices of impact or notices of disruption respectively delay to the client or subcontractors involved. It also includes accurate evidential facts and proper documentation to demonstrate any negative effects caused by COVID-19 on the critical path of a construction projects.

In the absence of contractual provisions, the contractor may have to find statutory or common law equivalent and evaluate further legal options.

The contractor has to consider in his overall assessment to prove and demonstrate non-liability, causation and damages for his disruption and delay claims. [13] In the absence of recent high supreme court decision for COVID-19 cases he has to consider previous high supreme court decisions dealing with disruption and delay claims for what the contractor was not responsible and therefor an excusable delay with or without compensation can then be determined. The contractor has to assess and prove disruption and delays by accurate records [18], cause-and-effect considerations based on comparison of as-planned vs as-built construction programmes, use proper CPM and PERT. Finally, the contractor has to demonstrate how he carried out mitigation. [24, 25]

In the absence of recent higher or highest court decision the contractor is well-advised not to rely on a general COVID-19 “free of obligation” thinking. The individual and specific effects due to COVID-19 implication on disruption and delays without any proper records and reasonable way of doing might be differently seeing by the court and judges at a later stage.

COVID-19 related disruption and delay implications may or may not be seen as excusable reason to apply for an extension of time under a construction contract. It depends on the concrete contract provisions, on the specific impacts and situation the construction project is in.

A “one COVID-19” argument or a kind of “general wild card” fits for an all disruption and delay reason for a contractor to relief from one or more contractual obligations is a risky endeavor.

As any construction projects varies from size and duration, it true that is a complex and an individual process of different parties involved and specific and individual activities occurred. Hence, the outcome of the view on disruption and delay of a construction period will also vary from construction project to another.

I have no doubt that long after the COVID-19 pandemic is settled and entirely under control contractors, clients, different societies, experts, courts and judges are forced to continue to deal with the implications of COVID-19 on construction projects. The COVID-19 implications on construction have just begun. [3]

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