Day 2, Session 3
Construction Delays, Disruptions
and Acceleration

Speaker:
Prof. Rizwan U. Farooqui, PhD
Professor and Co-Chair
Department of Civil Engineering
NED University of Engineering and Technology

Delay Claims – Time Impact Analysis

• Owner delays by 1 day:
  – Contractor can’t prove it, Contractor pays LDs.
  – Contractor proves it, he is Entitled for Time Extension and Extended Overheads.

• Key Questions:
  – How many days of delay caused by Contractor? – LDs
  – How many days of delay caused by Owner? – Time Extension and Extended GCs.
  – How many days of delay are Concurrent? – No LD; No Ext GC.
Delay Claims – Intensity

- More than 80% disputes are time disputes
  - Most money is in delay claims

CPM Schedules and Delay Claims – Contentious Issues

1. Realistic Nature of Schedule

- Some contractors and owners turn CPM schedules into weapons for use against one another; i.e. as biased documents to support the originator’s right to claims.

- These abuses frequently revolve around float.

- On one hand, the contractor can create an artificial network with multiple critical paths. The intent of the contractor would be to present claims if the owner causes delay on any of the paths.

- On the other hand, the owner may plan the project duration and shorten it. The owner’s intent would be to obtain a bid on the shortened duration and then to hold the contractor to the time.
CPM Schedules and Delay Claims – Contentious Issues

2. Who Owns Float?

Solution 1: Specifications Guidelines:

– Distributed float allocates float to each and every activity by the following formula (assuming straight-line distribution):

\[ DF = (AD/PD) \times TF \]

where,

DF = Distributed float for activity
AD = Activity duration
PD = Path duration
TF = Total float for activity

– This approach, or similar approaches, can help a long way in predetermining who gets what float, to the mutual satisfaction of all parties.

Solution 2: Use a Protocol:

– Delay on non-critical activities consumes float and shifts C.P. (shifts responsibility for future delay)

– Acceleration on C.P. also shifts C.P.

– To predetermine the answer to the question “To whom does float belong?”, the following approach can be adopted (from SCL Delay Protocol):

• Whoever comes to float first (consumes it), owns it: i.e. Project owns total float.

– Sometimes contract says: “Owner owns float”. Then, contractor can be penalized for delay (even on non-critical).
CPM Schedules and Delay Claims – Contentious Issues

3. Concurrent Delays

– Who is the first party initiating the delay?
– How much is the overlap/ concurrency?
– Who end the delay?
– Who is responsible for the whole delay?

Primicy of Delay (1)

• Case 1 (Excusable Non-Compensable):
  – Owner stops work on Sep 1 – Sep 30
  – Labor strike from Sep 1 – Sep 30

  Contractor gets time extension of 30 days but no Ext. GCs (in most cases).

• Case 2 (Excusable Partially Compensable)
  – Owner caused delay: Sep 1 – Sep 30
  – Contractor caused delay: Sep 1 – Sep 27

  Contractor gets:
  • 30 days time extension, and
  • 3 days compensation.
Primicy of Delay (2)

• Case 3 (Primicy of Delay):
  – Owner caused delay: Sep 1 – Sep 30
  – Contractor caused delay: Sep 5 – Sep 25

  Contractor gets:
  • 30 days time extension, and
  • 30 days compensation.

• Case 4 (Primicy of Delay):
  – Owner caused delay: Sep 5 – Sep 25
  – Contractor caused delay: Sep 2 – Sep 30

  Contractor gets:
  • No time extension, and
  • No compensation.

CPM Schedules and Delay Claims

• Delay Analysis
  – TF: Owned by path (shared between activities)
  – Any delay analysis will be based on C.P. analysis; C.P. changes often.
  – Questions that need to be answered before contractor can submit a claim for equitable adjustment:
    • How much delay (on C.P.)?
    • Which activities?
    • Who’s responsible?
Elements of a (Delay) Claim

1. Entitlement
   - Prove that (delay) responsibility is not yours.
   - Using Time Impact Analysis (for delay claims)

2. Quantum
   - Money Value of that entitlement

Types of Delays

1. Classic
2. Concurrent
3. Serial
4. Quantum
Weather Delays

- Time extension entitlement only when rain over and above the average for the season.
- Weather itself is a non-compensable delay. That is, if contractor entitled, no Extended GCs and no LDs.
- While considering weather delays, it is important to consider the aftermaths as well (e.g. remedial work, shortage of labor).
- Impact (remedial work) can be compensable
  - Must have taken all precautionary measures prior to flood (when warning was issued).
- Insurance usually covers the damages; also usually covers the direct cost and extended GCs.

Classification of Delays (1)

- Excusable Delay
  - Cause is an unforeseeable event beyond contractor’s control
  - Gets time extension
  - No LDs imposed
  - Compensable
    - May be Caused by Owner/ Representative OR
    - May be Caused by Neither Owner Nor Contractor (e.g. Third Party delay, Type I/ Type II site conditions)
    - Contractor entitled to Extended General Conditions (additional monetary compensation)
  - Non-Compensable
    - May be Caused by Neither Owner Nor Contractor (e.g. Unusual Weather delay) OR
    - May be Caused by Both Owner and Contractor (concurrent)
    - Contractor NOT entitled to Extended General Conditions (LDs waived)
Classification of Delays (2)

- **Non-Excusable Delay**
  - Cause is within contractor’s control
  - No time extension granted
  - LDs imposed
  - No entitlement for Extended General Conditions

Examples of Delays (1)

- **Excusable (1)**
  - Caused by Owner/Representative
    - Delay in shop drawing approval
    - Failure to provide site excess
    - Owner’s directed changes
    - Stop work orders
    - Errors and omissions in plans and specs
    - Slow response to RFIs
    - Imposing methods of performance (outside the contract)
    - Failure to coordinate
      - Sometimes, special conditions make contractors responsible & at-risk for coordination with other contractors, then it becomes a contractor delay.
Examples of Delays (2)

• Excusable (2)
  – Caused by Neither Owner/ Representative Nor Contractor
    • Acts of God (unusual weather/ floods, etc.) a.k.a. Force Majeure
    • Fires
    • Lack of action by government agencies (AHJ)
    • Third party delays (e.g. Power, Telephone)

Examples of Delays (3)

• Non-Excusable (Caused by Contractor/ Subs/ Suppliers)
  • Late performance of work (GC/ SC/ Supplier)
  • Poor and faulty workmanship
  • Poorly prepared shop drawings
  • Poor coordination by GC with SCs/ Suppliers
  • Slow mobilization
  • Insufficient resources (including management)
How to Prove Responsibility?

- Schedule
- Record Keeping
- Daily Reports

Schedule

- If contract does not require a schedule, how can the contractor prove that owner caused delay on C.P.?
  - Prepare a schedule even if the contract does not require
  - Submit the schedule to owner
  - *Could it backfire?*

- Schedule is a (contractual) tool to prove delay claims
  - As a contractor, it is to your advantage to have a good schedule in place so that you can prove delays.
Schedule Types

- Baseline Schedule
- Progress Schedules
- As-built Schedule

Baseline Schedule
- Establishes a plan of action for the contractor
- Having a schedule approved by owner helps process payment applications (even if the contract does not tie the two)
- A contractual tool to establish delay in a project (prove entitlement)

Progress Schedules
- How frequent we should update?
  - Weekly? Bi-weekly? Monthly?
  - Contractual requirement vs. Monitoring/Control Advantage
  - Earlier you know about a problem, the earlier and cheaper you can fix it.
  - How long does it take to update a schedule?
  - It’s easier to get a 2-day extension as against a 15-day extension.
- Even if the contract does not require you to have updates, provide a copy of the updated schedule to owner in the meetings.

As-built Schedule
Delay Analysis Considerations

- Cause of Delay
- Responsibility of Delay
- Amount of Delay

Delay Analysis/ Time Impact Analysis Techniques

- Retrospective Techniques
  - As-Planned Plus
  - As-Built Minus
- Prospective Techniques
  - Window of Time Analysis
- Different methods yield different results
- Each method has advantages and disadvantages
- Some methods have inherent flaws
  - Attack the method and not the calculations
Retrospective Delay Analysis Techniques (But-For Methods)

• As-Planned Plus (Impacted As-Planned)
  – Ignores As-Built
  – Assesses the impact of ONLY the other party’s delay on the original schedule assuming that there was no delay from the party using the method

• As-Built Minus (Collapsed As-Built)
  – A.k.a. But-For
  – Ignores As-Planned
  – Assesses the impact of ONLY the other party’s delay on the As-Built schedule assuming that there was no delay from the party using the method

• As-Planned vs. As-Built

• Refer to Examples

• Flaws in these Methods
  – Freeze Critical Path (does not consider shifts in C.P.)
  – Do not Consider Concurrency of delays

• Time is of Essence
• Delays are inevitable on construction projects
• Time and Money go hand-in-hand. When projects get late, additional costs are incurred.
• This makes it imperative to take control of project delays; timely and effectively.
Majority of construction projects worldwide are administered by the FIDIC forms of contract.

FIDIC recognises delay and related costs and has provisions related thereto. For example:

- Sub-Clauses 8.4 & 20.1 (FIDIC 1999 Edition)
- Clauses 44 & 53 (FIDIC 1987 Edition)

The FIDIC Provisions define the conditions where delay may be claimed as the basis for an Extension of Time (EOT). Some examples are:

- Late provision of design or drawings
- Unforeseeable Physical Conditions encountered on Site
- Inclement Weather
- Variations instructed by the Engineer (Additional Works etc.)
Meanwhile the principles of how delay and related costs should be calculated are not defined by FIDIC. This leads to issues; issues which are usually contentious due to various 'schools of thoughts' and varied interpretations existing worldwide.

Disputes are the usual outcome.

Contentious Issues in Delay Analysis resulting in Disputes

- Critical Path
- Who owns the Float?
- Concurrent (or Contractor) Delays and how these effect Entitlement
- EOT and its relation with Compensation for Delay
- Which is the best Method of Delay Analysis?
  » As-Planned Vs. As-Built Comparison
  » Impacted As-Planned
  » Collapsed As-Built / But-For
  » Time Slice / Sub-Networks / Time-Impact
  » Etc.
In order to eliminate disputes or facilitate settlement of disputes, there are now certain standards used worldwide. The leading standards are:

- Society of Construction Law’s Delay and Disruption Protocol (SCL Protocol)
- AACE 29R-03 (Forensic Schedule Analysis)

The SCL Protocol was finalized in October 2002 after several years of deliberations and considerable debate and agreement between experts from different backgrounds.
The objective of the SCL Protocol was to bring reasonableness and fairness into the delay assessment process and to eliminate widespread manipulation of complex delay issues.

The SCL Protocol can be downloaded from:

www.eotprotocol.com
Basic Principles suggested and recommended by the SCL Protocol

RULE NO. 1

If there is an Employer’s delay, which is beyond the Contractor’s control, and if this delay impacts the Completion Date of the Works, the Contractor should be entitled to receive an Extension of Time (EOT).

[This will effectively result in an extended Time for Completion and will relieve the Contractor from having to pay penalties for delay (or Delay Damages under FIDIC)]
RULE NO. 2

For the case of recovery of delay (or prolongation) costs incurred due to the Employer delays, the Contractor must be able to prove that there has been no other delay, which is in his own control, and which is equally (or partly) contributing for delaying the Time for Completion.

This category of delay is called a ‘Concurrent’ (or Contractor’s) Delay

[In order to win a Delay Costs Claim, the Contractor must be able to prove that he has not been responsible for Concurrent Delays to the Time for Completion]

RULE NO. 3

Where Contractor’s Delay to Completion occurs concurrently with Employer’s Delay to Completion, the Contractor’s concurrent delay should NOT reduce any Extension of Time (EOT), which is due.

[Result of Rule No. 1 will not change and is irrespective of the result of Rule No. 2]
Future Coordination….

Prof. Rizwan U. Farooqui, PhD
Professor and Co-Chair
Department of Civil Engineering
NED University of Engineering and Technology

Email: rizulhak@neduet.edu.pk

Cell: 0333-2240685