EOT AND DELAY ANALYSIS

DEBUNKING AND OVERCOMING JARGON IN DELAYS

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Some basics to begin with……

• Contract Obligations As to Time
• The Duty to Mitigate
• Time at Large
Contract Obligations As to Time

The Duty to Mitigate

Time at Large
Contract Obligations As to Time

If No Time for Completion is Specified = Time at Large

- Section 47 of the Contracts Act 1950

  “Where … no time for performance is specified, the engagement must be performed within a reasonable time”

- But what is a ‘reasonable time’?
Contract Obligations As to Time

Contracts Where Time for Completion is Specified

- Contractor has an express obligation to complete the works by the specified time for completion – failure to complete then Employer is entitled to general damages or liquidated damages

- Two types:
  - Time of the essence
  - Time extendible
Contract Obligations As to Time

Time of the Essence

- Failure to achieve the agreed deadline constitutes a fundamental / serious breach
- Such a breach entitles the other party to treat the contract as repudiated and terminate the same
Contract Obligations As to Time

Time of the Essence

- **Section 56(1) of the Contracts Act 1950**

  “When a party to a contract promises to do a certain thing at or before a specified time, ….. and fails to do any such thing at or before the specified time, the contract, or so much of it as has not been performed, becomes voidable at the option of the promisee, if the intention of the parties was that time should be of the essence of the contract.”
Contract Obligations As to Time

Time of the Essence

- Generally not applicable to construction contracts – not practical, necessary or fair

- Can be made of the essence by notice requiring performance by a certain date
  - Ultimatum for completion of works by Contractor
  - Ultimatum for payment by Employer
Contract Obligations As to Time

Time Extendible

- Most construction contracts ("EOT")
- Once completion date (or date as extended) passes, Employers may impose LAD
- Unless expressed otherwise, Contractor:
  - responsible for his own delays
  - responsible for neutral events
  - not responsible for Employer’s delays
Contract Obligations As to Time

Time Extendible

- EOT usually for Employer’s delays, e.g.
  - Late possession of site
  - Variations
  - Disturbances caused by Employer
  - Act of prevention by Employer
Contract Obligations As to Time

Time Extendible

- **Amalgamated Building Contractors v Waltham Holy Cross** [1952]

  “… the building owner cannot insist on a condition if it is his own fault that the condition has not been fulfilled.”
Contract Obligations As to Time

Time Extendible – No Power Under Contract to Extend when Employer responsible?

- **Peak Construction v McKinney Foundation** [1970]
  - Employer caused delay to the progress of the works
  - Lost the right to have work completed by specified time for completion
  - Time became *at large* as a consequence
  - Contractor then required to complete within a reasonable time
  - Employer lost the right to Liquidated Damages
Contract Obligations As to Time

Time Extendible – No Power Under Contract to Extend when Employer responsible?

- One of the grounds on which to set time at large
- Reasonable time to complete
- No entitlement to liquidated damages
Contract Obligations As to Time

Time Extendible

- Prudent employers would ensure EOT clauses drafted are wide

- Example in PAM 2018-Clause 24.3(g)
  
  “act of prevention or breach of contract by the Employer”
Contract Obligations As to Time

Time Extendible – No Proper Administration of the Contract by the Contract Administrator

*Kerajaan Malaysia v Ven-Coal Resources Sdn Bhd [2013]*

The High Court held that when the S.O. improperly refused to grant an EOT in a situation that would warrant an EOT, then time for completion was set at large.
Contract Obligations As to Time

Time Extendible – No Proper Administration of the Contract by the Contract Administrator

Nam Fatt Construction Sdn Bhd v JST Connectors (Malaysia Sdn Bhd and OCBCBank (Malaysia) Berhad [2015]

The employer’s acts of prevention made it impossible for the contractor to practically complete the works by the original date for completion.

High Court held Employer could not impose any LD on the Contractor because there was *no proper administration of the contractor’s extension of time applications* and/or there was *no adequate extension of time granted to the Contractor.*
Contract Obligations As to Time

Summary

Time of the essence:
- Fundamental term of contract
- Contract voidable (i.e. can be terminated)
- Not practical for construction contracts

Time extendable:
- Permits extension for Employer’s delay
- Maintains right to impose LAD
- Grounds for EOT must be expressed in contract
- If not, right to impose LAD lost
Contract Obligations As to Time

Sectional Completion of the Works

- Employer intends to take possession of completed parts of the Works at different completion dates
- Specifies in the tender document the parts as individual Sections of the Works with individual Dates for:
  - Commencement
  - Completion
  - Liquidated Damages rates
Contract Obligations As to Time

Sectional Completion of the Works

- Contractor when tendering is able to price for and plan for resources needed to complete the Sections of the Works by the Sectional Completion Dates

- Standard forms of contract, such as PAM 2018 cater for Employer’s intention

- Caution needs to be exercised when defining the scope of works for each Section with clear definition so as to avoid any ambiguity over the Sections
Contract Obligations As to Time

Sectional Completion of the Works

- For Practical Completion, Defects Liability Period, Extension of Time and release of Retention Fund, each section of the Works is treated as if it is a separate and distinct contract.

- The Architect has to issue an individual Certificate of Sectional Completion to certify practical completion of the Section upon which a proportion of the Retention Fund is released and from which a separate Defects Liability Period starts to run.

- The value should be proportioned according to the value of that Section over the value of the whole Works.
Contract Obligations As to Time

Sectional Completion of the Works

- Where a Relevant Event or an excusable cause of delay has delayed the Sectional Completion Date

  - Architect has to grant an extension of time to the Sectional Completion Date

  - After which, Sectional Liquidated Damages as stated in the Appendix to the Conditions of Contract will start to accrue in the event of non-completion
Contract Obligations As to Time

Partial Possession of the Works

- A discretion for the Employer to take possession and occupy any part of the Works at any time before practical completion of the Works is achieved (e.g. PAM 2018 Clause 16.1)

- Prior consent from the Contractor required which cannot be unreasonably withheld
Contract Obligations As to Time

Partial Possession of the Works

- When Employer takes possession and occupies a part of the Works, essentially the Contractor’s obligation to complete the part of the Works by the original time for completion ends.
Contract Obligations as to Time

Practical Completion of the Works

• PAM 2018 Clause 15.1 states:

“When in the opinion of the Architect, the Employer can have full use of the Works for their intended purposes, notwithstanding that there may be works and defects of a minor nature still to be executed and the Contractor has given to the Architect a written undertaking to make good and to complete such works and defects within a reasonable time specified by the Architect; and other requirements expressly stated in the Contract Documents as pre-requisite for the issuance of the Certificate of Practical Completion have been complied with.”
Practical Completion of the Works

- when the work reaches a state of readiness for use or occupation by the owner, and free from any known omissions or defects which are not merely trivial

- Certain events follow from the practical completion of the works, the most important of which are:
  
  i) preparation of final accounts;
  
  ii) the release of the performance bond;
  
  iii) the commencement of the defects liability period;
  
  iv) release of one part of the retention sum; and
  
  v) the passing of risks associated with the completed works
Contract Obligations As to Time

Practical Completion of the Works

- Contractor to give a written notice to the Architect as soon as he thinks the whole of the Works are practically completed.
- Within 14 days of receiving the Contractor’s notification, the Architect must do one of two things:
  - He must either notify the Contractor with reasons why he is of the opinion that the Works are not Practically Complete; or
  - issue a Certificate of Practical Completion if he agrees with the Contractor’s notice.
Practical Completion of the Works

- Once Practical Completion of the Works takes place:
  - the defects liability period commences;
  - the Contractor is obliged to make good defects including those which were to be executed at the time of Practical Completion
  - The Architect is obliged to issue the CPC within a reasonable time (and should not follow the common practice of backdating the CPC)
Contract Obligations As to Time

Due Diligence

❖ “…regularly and diligently proceed…” [PAM 2018, Clause 25.1]

❖ “…proceed regularly and diligently…” [PWD 203A (Rev. 2007), Clause 51.1(a)(ii)]

❖ “…shall proceed with due diligence and expedition and without delay…” [CIDB 2000, Clause 17.1(a)]
Contract Obligations As to Time

Due Diligence

- Some guidance from the Shorter Oxford …

  ‘diligence’ – the attention and care due from a person in a given situation

  ‘expedition’ – the act of expediting, to perform quickly, dispatch
Contract Obligations As to Time

Due Diligence

- Arbitrator’s view upheld in *GLC v Cleveland Bridge* [1984]

  “… the respondent could not in my view be said to be lacking in diligence if it paced its work so as to ensure delivery consistent with the appropriate access and key dates …”
Contract Obligations As to Time

Due Diligence

- **Trident Engineering Company v Mansion Holdings Limited**

“The term “regularly and diligently” must incorporate a wide spectrum of diligence and regularity. At the one end of the spectrum are breaches which are just short of due diligence and regularity, such as falling slightly behind the schedule or causing some minor interruption. At the other end are severe breaches amounting non-performance, such as doing no more than keeping a watchman on the site, or perhaps proceeding with a less than minimal workforce while directing the major labour workforce to other more profitable projects. Both are breaches of duty but with very different consequences.”
Contract Obligations As to Time

Best Endeavours

- Obligation found in most standard forms of contract
- For example, Clause 23.6 of PAM 2018 states,

  “The Contractor shall constantly use his best endeavour to prevent or reduce delay in the progress of the Works...”

- Contractor is required to mitigate delays in progress using ‘best endeavours’
- What are ‘best endeavours’?
Contract Obligations As to Time

Best Endeavours

- Defined by Powell-Smith and Chappell in Building Contract Dictionary

“… the contractor must constantly do everything reasonably practicable to prevent delay, short of incurring additional expenditure …”
Contract Obligations As to Time

The Duty to Mitigate

Time at Large
Duty to Mitigate

• To *mitigate* means “avoiding the consequences of a wrong whether in tort or breach of contract”

  *(McGregor on Damages 15 Edition -section 272)*

• The duty to mitigate was recognised by the Federal Court in Malaysia in *Kabatasan Timber Extraction Co. v Chong Fah Shing* [1969]
Duty to Mitigate

*Kabatasan Timber Extraction Co. v Chong Fah Shing* [1969]

- The appellant had failed to deliver some logs within 500 feet of the respondent’s sawmill as contracted and instead delivered the logs to areas beyond 500 feet but just outside the site.

- The Federal Court held that the appellant was only liable to the respondent under a counterclaim for the cost of hauling the logs to the sawmill and not for the cost of buying logs from elsewhere as the respondent had the duty to mitigate his damages.
Duty to Mitigate - Delay

- A delay caused by the employer is a breach, and subject to the provision of the contract would be governed by the rules of mitigation irrespective of whether the contract contained express provisions requiring mitigation.

- With regard to time, mitigation is similar to the situation with respect to the obligation to use best endeavours.

- Where there are express clauses in the contract which require the contractor to mitigate the effects of such a loss then this may import a contractual obligation to undertake mitigatory measures and failure to do so may amount to breach of contract.
Duty to Mitigate - Delay

Example of express obligation in Standard Forms

- IEM CE 2011

  - Clause 44.1 (4) - Before issuing a Certificate of Extended Date for Completion, the Engineer may take into account
    - the reasonable efforts and steps taken by the Contractor to mitigate the effects of any delay caused by the relevant events; and
    - Whether the Contractor has been executing the Works regularly and diligently
Duty to Mitigate - Delay

Example in practice

- Re-programming the works to reduce or overcome the delay where possible

- But "NOT" a requirement or obligation to add additional resources – such action would amount to acceleration
Duty to Mitigate – Expense

Example in practice

Upon completion of substructure, Contractor is advised by the Engineer that there will be a delay to the superstructure design information of two months and the Contractor therefore cannot progress the work.

- Resources already on site? = Reasonable steps to mitigate loss = Relocate / stand down labour resources / demob plant & equipment

- Cost of demobilisation and re-mobilisation will be recoverable as costs incurred in mitigation

- Contractor cannot claim for resources on the site which have been relocated
Duty to Mitigate – Expense

Example in practice

Upon completion of substructure, Contractor is advised by Engineer that there will be a delay to the superstructure design information of two months and the Contractor therefore cannot progress the work

• What if no indication given of the extent of delay and the Contractor decided to demobilise but the design information arrives the day after demobilisation?

“…even though the resulting damage is in the event greater than it would have been had the mitigation steps not been taken…the plaintiff can recover for loss incurred in reasonable attempts to avoid loss.”
Contract Obligations As to Time

The Duty to Mitigate

Time at Large
Time At Large

“The phrase ‘time at large’ is much loved by contractors. It has about it a ring of plenty; the suggestion that the Contractor has as much time as he wants to complete the works”

Brian Egglestone

(Liquidated Damages and Time Extensions in Construction Contracts)
Time At Large

• No completion date in contract

• Previously agreed time no longer applies due to:
  – an act of prevention by the Employer not covered by EOT provision;
  – EOT clause maladministration or misapplied;
  – waiver of the original time requirements;
  – interference by the Employer in the certifying process
**Time At Large**

*Thamesa Designs Sdn Bhd v Kuching Hotels Sdn Bhd* [1993]

The Employer was not entitled to deduct liquidated damages because site possession was handed over late to the Contractor and there was no extension of time provision for late possession.

*Kerajaan Malaysia v Ven-Coal Resources Sdn Bhd* [2013]

When the S.O. improperly refused to grant an EOT in a situation that would warrant an EOT, then time for completion was set at large thus causing the Employer to lose its right to levy liquidated damages.
Time At Large

• Where time is said to be at large, the Contractor’s duty is then to complete the works within a reasonable time

• Employer loses his right to deduct liquidated damages since there is not a time from which liquidated damages can run - no upholding of the clause

• Any claims for damages for late completion, will have to be made on the basis of general damages, the amount of which must be proved to have been incurred.
Extension of Time (EOT) Provisions
Extension of Time (EOT) clauses

2 Types of Excusable Delays under EOT Clauses

• Compensable for contractor’s cost: Employer’s delay events (variation, late receipt of drawings/instruction)

• Non-Compensable for contractor’s cost: Neutral events (inclement weather)
<table>
<thead>
<tr>
<th>Type of delay</th>
<th>Cause of delay</th>
<th>Time extension</th>
<th>Contractor’s delay Costs</th>
<th>Owner’s delay Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inexcusable Delays</td>
<td>Due solely to contractor’s act/default</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Excusable Delays</td>
<td>Outside control of the contractor</td>
<td></td>
<td>See below</td>
<td></td>
</tr>
<tr>
<td>a) Non-compensable</td>
<td>Concurrent delays (both inexcusable and excusable delays are concurrent with one another) and neutral events (3rd party’s delay &amp; force majeure)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>a) Compensable</td>
<td>Due solely to owner</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Contractor’s Delays</td>
<td>Owner’s Delays</td>
<td>Neutral Events for which the Employer has accepted responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of proper resources</td>
<td>Differing Site Conditions</td>
<td>Acts of God</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of proper planning</td>
<td>Design Changes &amp; Variations</td>
<td>Inclement Weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under estimation of duration</td>
<td>Suspension</td>
<td>Labour Strikes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material delivery delays</td>
<td>Delays by other contractor directly engaged by Owner</td>
<td>Utilities’ delay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcontractor delays</td>
<td>Late site access</td>
<td>Acts of the Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to follow schedule</td>
<td>Later permits</td>
<td>Acts of others beyond parties’ control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Extension of Time Clauses

• Notices

• Detailed Particulars

• Record Keeping

• Contractual Duties of the Architect
EOT Clauses

Notices of Delay

• *Bremer Handelsgesellschaft mbh v Vanden Avenne-Izegem* [1978] confirmed that unless it was expressly so stated in the clause, a notice of delay would not be a condition precedent to an EOT entitlement.

• Of all the Malaysian standard forms of contract, only PAM 2006, PAM 2018 and AIAC 2018 expressly state that the giving of notice of delay/EOT claim is a condition precedent to the right to an EOT.

• PAM 2006-Clause 23.1(a) “…the giving of such written notice shall be a condition precedent to an entitlement of an extension of time”.

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EOT Clauses

What if the Contractor Fails to Give Notices of Delay which is or is not a condition precedent to EOT entitlement?

- *London Borough of Merton v Stanley Hugh Leach* (1985) 32 BLR 51

Held: Failure by the contractor to give notice under clause 23 on it becoming reasonably apparent that the progress of the work was delayed was a breach of contract and that breach could be taken into account by the architect providing an extension of time.

- The Contractor’s entitlement will be affected as the certifier can take the Contractor’s breach into account in assessing the EOT
- Contractor must not benefit from his own breach
- Could the certifier / Employer have mitigated the impact of the delay had he been given timely notice?
EOT Clauses

What if the Contractor Fails to Give Notices of Delay which is a condition precedent to EOT entitlement?

- *Hartajaya-Benteng Timur-Amr Jeli JV Sdn Bhd v Kerajaan Malaysia and another* [2018] MLJU 331

Obiter dicta: contract administrator ought always to consider whether there were any factors known to him which might justify an extension of time even though the contractor may not have give written notice of them.
Procedures for Applying for EOT

Detailed Particulars of the Extension of Time Claimed

• The terms ‘particulars’ or ‘relevant information’


- The Contractor is to prepare written submission of the effect the delaying event had on the works schedule
- Effect on works schedule is best demonstrated by a delay analysis
- Scheduling documentation
- Proposal for reducing or preventing the delays
Procedures for Applying for EOT

Detailed Particulars of the Extension of Time Claimed

- Contract requirements to submit particulars

  - PAM 2006 & PAM 2018, Clause 23.1(b) requires the Contractor to

    “…send …his final claim for extension of time duly supported with all particulars to enable the Architect to assess any extension of time to be granted…”
Procedures for Applying for EOT

Detailed Particulars of the Extension of Time Claimed

• Reasonable written particulars should as a minimum refer to:
  - Contract reference to event of delay
  - The background of the delay event
  - The length of the delay and extension of time required
  - Scheduling documentation for delay analysis
Procedures for Applying for EOT

Contractor’s Obligation to Prepare and Keep Contemporaneous Records

- standard forms of contract only describe the requirement of ‘particulars’ or ‘information’ or ‘details’ in general terms
- shape and form of documentary evidence would depend on each particular circumstance of each delaying event
Procedures for Applying for EOT

Contractor’s Obligation to Prepare and Keep Contemporaneous Records

• How to record suspension of works from 2 Jan to 9 Jan 2019?
• site daily report dated 2 Jan 2019 that states, “excavation work at gridline A-C/1-2 is suspended”
• site daily report dated 10 Jan 2019 states, “excavation work at gridline A-C/1-2 resumes”
Procedures for Applying for EOT

Contractor’s Obligation to Prepare and Keep Contemporaneous Records

• How to record suspension of works from 2 Jan to 10 Jan 2019?

exc wk  gap  exc wk

OR

exc wk

suspension

exc wk
Procedures for Applying for EOT

Contractor’s Obligation to Prepare and Keep Contemporaneous Records

• advisable for contractors to produce updated work programmes at regular intervals of time to reflect the actual progress of works at each interval of time:
  – actual start date,
  – actual finish date and
  – % complete of each work activity including variation works
Contractual Duties of Architect, Engineer or Supervising Officer

General Duty: to determine a fair and reasonable extension of time

• Even if a contract were silent on the Architect’s duty, there is an implied duty to grant a fair EOT.

• John Barker Construction Ltd v London Portman Hotel Ltd (1996) 83 BLR 31 held:

“A contract administrator, such as, an architect had an implied duty to act fairly and lawfully in determining an EOT so that the EOT would be valid. The architect’s implied duty was consistent with the architect’s quasi-arbitral position…”
Contractual duties of Architect, Engineer or Supervising Officer

General Duty: to determine a fair and reasonable EOT

- Is there a duty to evaluate delays which are known to have occurred but where no notice was given?
  - Where the notice requirement is not a condition precedent the certifier is under an obligation to evaluate the Contractor’s entitlement caused by such event
  - Also general obligation to take into account any event which may affect the date for completion under the Contract to preserve the Employer’s LAD entitlement
Contractual Duties of Architect, Engineer or Supervising Officer

**General Duty:** to determine a fair and reasonable extension of time

- PAM 2006 & PAM 2018-Clause 23.10 gives the Architect a discretion to “within twelve (12) Weeks after the date of Practical Completion review and fix a Completion Date later than that previously fixed, if in his opinion the fixing of such later Completion Date is *fair and reasonable* having regard to any of the Relevant Events, whether upon reviewing a previous decision or otherwise and whether or not a Relevant Event has been specifically notified by the Contractor under Clause 23.1”
Contractual Duties of Architect, Engineer or Supervising Officer

General Duty: to determine a fair and reasonable extension of time

• Can the Architect/S.O./Engineer send a draft EOT assessment to the Employer for an approval prior to the former granting any EOT to the Contractor?

• Peninsula Balmain Pty Limited v Abigroup Contractors Pty Limited [2002] NSWCA 211 - the Court of Appeal opined that when a superintendent exercised certifying functions, the superintendent must act honestly and impartially as a certifier
Contractual Duties of Architect, Engineer or Supervising Officer

General Duty: to determine a fair and reasonable extension of time

- the Employer is prohibited from controlling or interfering with the contract administrator’s certifying functions
- the Employer is nonetheless at liberty to provide particulars of the Contractor’s culpable delays so that the contract administrator is better able to assess the Contractor’s EOT claim and make an informed decision.
Contractual duties of Architect, Engineer or Supervising Officer

Methodology and Timescale to Assess EOT Applications

*Lian Soon Construction Pte Ltd v Guan Qian Realty Pte Ltd*

[2000] 1 SLR 495

the architect should have dealt with each delaying factor separately rather than lumping all of them together and giving one block extension.
Contractual duties of Architect, Engineer or Supervising Officer

Methodology and Timescale to Assess EOT Applications

*John Barker Construction Ltd v London Portman Hotel Ltd*

(1996) 83 BLR 31

due to the architect’s assessment of the extension of time was fundamentally flawed, not fair and not valid because he had not carried out a logical analysis in a methodical way of the impact which the relevant events had or were likely to have on the contractor’s planned programme. Instead, the architect made an impressionistic rather than calculated assessment of the extensions.
Contractual duties of Architect, Engineer or Supervising Officer

Methodology and Timescale to Assess EOT Applications

_Hartajaya-Benteng Timur-Amr Jeli JV Sdn Bhd v Kerajaan Malaysia and another [2018] MLJU 331_

Held: time became at large because the contract administrator issued a Certificate of Non-Completion without having first assessed the contractor’s EOT application. Time would also become at large even if the EOT application had been wrongly rejected.
Contractual duties of Architect, Engineer or Supervising Officer

Methodology and Timescale to Assess EOT Applications

PAM 2018 Clause 23.4 - Architect, 6 weeks from receipt of the Contractor’s sufficient claim details, to make an assessment on the Contractor’s extension of time entitlement
Delay Analysis
Function of Schedule / Programme

(a) Planning & Coordination – scope, sequence, timetable
(b) Control – yardstick, monitor, report, remedy actions
(c) Contractual Requirement – deliverable, EOT, disruption, L&E

Standard Forms of Contract focus on circumstances entitling Contractor to EOT rather than the basis on which it might be computed.

Burden of proof
Development of techniques:
- as-planned v as-built, as-planned impacted

Development of techniques:
- as-planned v as-built, as-planned impacted, collapsed as-built, window, TIA

EOT: Letter + bar chart + collection of letters, RFI etc

EOT Substantiation? Bar Chart?
Traditional Schedule / Programme
# Traditional Schedule / Programme

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Tower</td>
<td></td>
</tr>
<tr>
<td>Mobilisation, site facilities, site preparation</td>
<td>5</td>
</tr>
<tr>
<td>Piling</td>
<td>3</td>
</tr>
<tr>
<td>Podium Construction</td>
<td>6</td>
</tr>
<tr>
<td>Construct Office Tower (Carcase only)</td>
<td></td>
</tr>
<tr>
<td>Relocate existing 33kv TNB Building</td>
<td></td>
</tr>
<tr>
<td>Provisional Sum [Office Tower]</td>
<td></td>
</tr>
<tr>
<td>Barrier Gate Carpark System</td>
<td>2</td>
</tr>
<tr>
<td>Hotel Tower</td>
<td></td>
</tr>
<tr>
<td>Construct Hotel Tower (Carcase only)</td>
<td>15</td>
</tr>
<tr>
<td>Provisional Sum [Hotel Tower]</td>
<td>10</td>
</tr>
<tr>
<td>Swimming pool, pool deck &amp; finishes</td>
<td>5</td>
</tr>
<tr>
<td>External Works</td>
<td>2</td>
</tr>
<tr>
<td>Testing &amp; Commissioning</td>
<td>4</td>
</tr>
<tr>
<td>Handover</td>
<td>0</td>
</tr>
</tbody>
</table>

Baseline As-Planned Schedule 40 days

- Milestone
- Completion Date
- Dependencies
- Task names
- Task bars
Delay Analysis Techniques In Detail

• As-Planned Impacted

• As-Planned v As-Built Analysis

• As-Built Collapsed / ‘But-For’ Analysis

• Time Slice / Window Analysis
Delay Analysis Techniques In Detail

(i) As-Planned Impacted Analysis

• Basis of the method
  - Baseline programme showing planned duration of activities based on planned productivity rate
  - Add an identified excusable event that causes a delay (i.e. Employer’s delay) into the baseline programme.
  - If the event lies on the critical path, it will push subsequent activities and the completion date beyond the original Date for Completion – thus recalculating a new extended Date for Completion
Delay Analysis Techniques In Detail

(i) As-Planned Impacted Analysis

- EOT calculation

  New extended Date for Completion
  Less original Date for Completion
  = EOT entitlement
“As-Planned Analysis Impacted”

“What-if” Analysis

- Site Clearance
- Cofferdams
- Abutments
- Deck Structure
- Deck Furniture / E&M
- Finishes & Commissioning
- Appoint Subcontractor
- Construct Approach Roads
- Open Bridge and Roads

MONTHS

0 1 2 3 4 5 6 7 8 9 10 11 12
“As-Planned Impacted Analysis”

“What-If” Analysis

Bridge

At-Grade Approach Roads

MONTHS

0 1 2 3 4 5 6 7 8 9 10 11 12

Late site possession

Site Clearance

Cofferdams

Deck Structure

VO

Abutments

Deck Furniture / E&M

Finishes & Commissioning

Construct Approach Roads

Open Bridge and Roads

Appoint Subcontractor

40d Entitlement

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Delay Analysis Techniques In Detail

(i) As-Planned Impacted Analysis

• Disadvantages

- Does not reflect actual as-built start and finish dates of activities
- Does not reflect any changing position of critical path

*Great Eastern Hotel Company Ltd v John Laing Construction Ltd* - Court not accept Impacted As Planned because:

- “…it takes no account of the actual events which occurred on the Project and give rise to an hypothetical answer….”
Delay Analysis Techniques In Detail

(i) Impacted As-Planned Analysis

• Advantages

- As-built information is not needed
- A relatively inexpensive analysis
- Simple illustrations of individual events
Delay Analysis Techniques In Detail

(ii) As-Planned v As-Built Analysis

• **Basis of the method**

  - As-planned and as-built compared side by side and inferences drawn from differences perceived

  - Mere comparison on the durations of the planned activities with the as-built durations and attributes the differences as an EOT entitlement

  - Does not use critical path method of delay analysis
Delay Analysis Techniques In Detail

(ii) As-Planned v As-Built Analysis

• EOT calculation

  New extended Date for Completion
  Less original Date for Completion
  \[= \text{EOT entitlement}\]
Delay Analysis Techniques In Detail

(ii) As-Planned v As-Built Analysis

EOT = Difference between Planned completion and As-built Completion
(ii) As-Planned v As-Built Analysis

- **Disadvantages**
  - Questionable method of analysis - very simplistic and unreliable
  - Assumes identified delays all give rise to an EOT – Assume no delays by contractor’s fault
  - Does not use Critical Path Method – difficult to demonstrate critical path and extent of the effect on the completion date.
  - Hence, not recommended unless as a last resort
Delay Analysis Techniques In Detail

(ii) As-Planned v As-Built Analysis

• Advantages
  - Relatively inexpensive to perform
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

• **Basis of the method**
  
  - Use of the as-built programme (as-built start and finish dates)
  
  - Uses critical path method shown in as-built programme
  
  - Subtraction of excusable delay events (e.g. Employer’s delays) from the as-built programme
  
  - If excusable delay events lie on critical path, the as-built Date for Completion will ‘move backwards in time’ to an earlier and new date for completion (“Collapsed Date for Completion”)
  
  - Limited to retrospective delay analysis
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

• EOT calculation

- As-built Date for Completion contains both Contractor’s delays (non-excusable events) and Employer’s delays (excusable events)

- Collapsed Date for Completion contains only Contractor’s delays (non-excusable events)

- As-built Date for Completion – Collapsed Date for Completion = EOT entitlement
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

Progress after 15 months

- Bridge
  - Site Clearance
  - Cofferdams
  - Abutments
  - Deck Structure
  - Deck Furniture / E&M
  - Finishes & Commissioning
  - Appoint Subcontractor
  - Construct Approach Roads (3km)
  - Open Bridge & Roads
  - Actual Finish Month 15

- At-Grade Approach Roads
  - VO 30
  - VO 45
  - VO 6

Late site possession
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

[Diagram showing construction activities and timelines with annotations like "As-Built but for Finish: Month 15 minus 51 days", "Actual Finish Month 15", "51d Entitlement"]
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

• Disadvantages

- Removal of the excusable delays from the As-Built programme may not reveal the true impact of that event

- The re-created critical path after removal of excusable delay events may not show the critical path that existed at the time of the delay event

- It is difficult to establish retrospective as-built logic

- Difficult to apply where lots of delay events exist and where as-built programme is not sufficiently detailed
Delay Analysis Techniques In Detail

(iii) As-Built Collapsed / ‘But-For’ Analysis

- Advantages

- As-built programme and therefore considers as-built and not as-planned data
- Retains and exposes culpable delay
- Comparatively simple
Delay Analysis Techniques In Detail

(iv) Time Impacted/ ‘Window’ Analysis

• **Basis of the method**
  - Uses Contractor’s planned programme and actual progress data to determine the progress of the works at the time of delay.
  - A critical path method programme that is updated in regular intervals (e.g. Month 0, Month 1, Month 2) using actual start and finish dates that have occurred in each interval.
  - The update would include Contractor’s delays (non-excusable events) and Employer’s delays (excusable events). Hence, critical path is dynamic.
Master Programme

**Bridge**
- Site Clearance
- Cofferdams
- Abutments
- Deck Structure
- Deck Furniture / E & M
- Finishes & Commissioning

**At-Grade Approach Roads**
- Appoint Subcontractor
- Construct Approach Roads (2km)
- Open Bridge & Roads

**MONTHS**

0 1 2 3 4 5 6 7 8 9 10 11

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Progress after 3 months (1st Window)

Critical Delay to completion by 10 + 30 days

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Progress after 6 months (2\textsuperscript{nd} Window)

- **Bridge**
  - Late site possession
  - Site Clearance
  - Cofferdams
  - Deck Structure
  - Abutments
  - Deck Furniture / E & M
  - Finishes & Commissioning
  - No critical delay
  - Status date = Month 6

- **At-Grade Approach Roads**
  - Late appoint subcon
  - Construct Approach Roads (3km)
  - Appoint Subcontractor
  - Open Bridge & Roads
  - No critical delay
  - Because float
  - 40d EoT
Progress after 9 months

Status date = Month 9

- Contractor's culpable delay not critical

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Progress after 12 months (4th Window)

Status date = 12th month

LAD due to contractor’s own culpable delay taking a longer time to finish

Expected finish now Month 13
Progress after 15 months (5th Window)

At-Grade Approach Roads

Construct Approach

Open Bridge & Roads

46d EoT
10 + 30 + 6

Figures reflecting
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Delay Analysis Techniques In Detail

(iv) Time Impacted / ‘Window’ Analysis

- **Disadvantages**
  
  - Accurate progress information must be available
  
  - Most time-consuming and costly
  
  - Result is heavily influenced by the quality of the base programme
  
  - Require adequate and consistent progress information at each update
  
  - Anything complex and “different” from that which has been accepted by the other party may be difficult for them to accept
Delay Analysis Techniques In Detail

(iv) Time Impacted / ‘Window’ Analysis

• Advantages

- Recommended by the SCL Delay & Disruption Protocol- 2\textsuperscript{nd} Edition

- Each window has relatively fewer activities to be analysed compared with the overall programme

- Considers the impact of an event based on the actual as-built progress at the time of the delay event occurring = contemporaneous EOT.

- Indicates the critical path at the time of the delay event occurring rather than the ultimate or initial critical path
Which Technique is best?

Objective of delay analysis:
(a) What was supposed to happen?
(b) What did actually happen?
(c) What were the variances?
(d) How did they affect the project programme?

Different techniques have varying capacity to answer these questions.

Differences between techniques revolve around the type of programme used as the reference programme (such as, the as-planned/baseline programme, as-built programme, updated programme) to measure the extent of delays, determine causation and assess liability.
Which Technique is best?

Contract Requirements

1. Prospective analyses are performed in real-time during the course of the project.

2. Retrospective analyses are performed after project completion

Contract provisions typically contemplate the preparation of delay analysis utilising the prospective method (insertion of delay events into the schedule at the time of the occurrence of the event) to facilitate assessment and award EOT contemporaneously
Which Technique is best?

PAM2018

Clause 23: “If the Contractor is of the opinion that the completion of the Works is or will be delayed beyond the Completion Date by any of the Relevant events …, he may apply for an extension of time … (a) … give written notice … together with an initial estimate …, (b) within twenty eight (28) Days of the end of the cause of delay, the Contractor shall send … his final claim for extension of time …“.

Clause 23.4: “… the Architect shall subject to Clauses 23.5 [other consideration for extension of time], 23.6 [Contractor to prevent delay] and 23.8 [Relevant Events], consider … and shall either reject … or issue a Certificate of Extension of Time within six (6) Weeks from the receipt of sufficient particulars …”
Which Technique is best?

**Purpose of Analysis** – EOT applications? Demonstrate compensable delay? Demonstrate disruption? Acceleration?

**Source Data Availability & Reliability** – quality of programmes, as-built records etc.

**Time Available / Target Audience** – EOT application within prescribed period? Proposal for consideration? Submission in dispute resolution proceedings?

**Value of Dispute** – must be cost effective.

**Complexity of the dispute** – number of events, type of project, size of programme.
Loss & Expense
The Definition of Loss & Expense

• Terms “Loss and Expense” and “Additional Cost” are familiar to those using construction contracts.

2 categories of loss and expense in contracts:

• Actual loss and expense incurred as a result of the other party’s breach; and

• Agreed rates as compensation for the other party’s breach.
Actual loss and expense incurred as a result of the other party’s breach

- All standard forms of construction contract in Malaysia provide contractors a contractual right to receive reimbursement of actual loss and/or expense incurred as a result of a delay or disruption to the Works caused by default/breach (e.g. delay to completion of works).
Actual loss and expense incurred as a result of the other party’s breach

Each party has 2 rights of claim

• Contractual right given by a contract clause to claim loss and expense resulting from the other party’s breach.

• Common law right given by common law (law laid down by courts’ decisions, such as, Hadley v Baxendale [1854]) to claim damages from the other party’s breach.
Actual loss and expense incurred as a result of the other party’s breach

- Common law right - *Hadley v Baxendale [1854]* has 2 rules:

  1st rule general damages arising naturally, i.e. *according to the usual course of things from such breach of contract itself*;

  2nd rule special damages that result from the breach and which both parties had in mind when they entered into the contract

*Hadley’s* rules are codified in S. 74 (1) of Contracts Act 1950

“When a contract has been broken, the party who suffers by the breach is entitled to receive, from the party who has broken the contract, compensation for any loss or damage caused to him thereby, which naturally arose in the usual course of things from the breach, or which the parties knew, when they made the contract, to be likely to result from the breach of it”.
Actual loss and expense incurred as a result of the other party’s breach

Principle of Compensation

- *Robinson v Harman [1848]*

  where a party sustains a loss by reason of a breach of contract he is, so far as money can do it, to be placed in the same situation, as if the contract had been performed.
Actual loss and expense incurred as a result of the other party’s breach

The Definition of Loss & Expense

- Textbook Definitions:


  In *FG Minter v WHTSO* the court held that *direct loss and/or expense* is loss and expense which arises naturally and in the ordinary course of things

  It follows from the *Minter* decision that the sole question which arises in relation to any head of claim put forward by a Contractor is whether such claim arises “*naturally and in the ordinary course of things*”
Actual loss and expense incurred as a result of the other party’s breach

The Definition of Loss & Expense

Summary

Loss and expense can be defined as loss and damage flowing naturally in the usual course of things (as codified in S74 of the Contracts Act)

The expression is used in standard forms of construction contract to describe loss recoverable by the Contractor caused by the regular progress of the works being materially affected by certain “relevant matters” including variations and acts of prevention by Employers