

Delay & EOT
De-mystifying The Cause-To-Effect
Substantiation

11th June 2009

by

Belden Premaraj

Messrs. Belden

Delay & Extension of Time

Cause to Effect
Substantiation

Construction & Time

“It has been said that the only major construction project to finish on time and to budget was a church where, presumably, divine intervention played a role”

Dr. Julian Critchlow

The Evidentiary Burden

All the Crowd would shout back

“Yes, yes, we believe you.”

But as the trapdoor snapped open,
the Crowd would yell

*“But you ain’t got no proof...
and given that the burden of proof is on you,
you can hang”*

Cause to Effect

“Proxima Causa”

“Causes are spoken as if they were as distinct from one another as beads in a row or links in a chain, but – if this metaphysical topic has to be referred to- it is not wholly so. The chain of causation is a handy expression, but the figure is inadequate. Causation is not a chain but a net. At each point influence, force, events precedent and simultaneous, meet, and the radiation from each point extends infinitely.”

*Lord Shaw of Dunfermline,
Leyland Shipping v Norwich Union Fire Insurance Society*

Proxima Causa

“The test is what an informed person in the building industry (not the man in the street) would take to be the cause”

Judge Bowsher QC

**P&O Developments Ltd v The Guy’s and St.
Thomas’s NHS Trust**

The Work Program

- Impacted Work Program
- A Scientific & Reasonable Method of Proof!
- Best Evidence Rule
- The Standard of Proof = Burden of Proof
- What is the Legal View? - Commentaries

John Barker Construction Ltd v London Portman Hotel Ltd

“the SO must:-

- 1. Apply the rules of the contract;*
- 2. Recognise the effects of constructive change*
- 3. Make a logical analysis, in a methodical way, of the effect of the developer’s time risk events on the contractor’s programme;*
- 4. Calculate, rather than make an impressionist assessment of, the time taken up by events”*

Mr. Recorder Toulson QC

Henry Boot (Construction) UK Ltd v Malmaison Hotel (Manchester) Ltd

“The Respondent was entitled to respond to the claim both by arguing that variations, late information and so on relied on by the Claimant did not cause any delay because they were not on the critical path....”

Aoki Corp v Lippoland (Singapore) Pte Ltd

“Without going into the full detailed methodology by which extension of time applications are evaluated, I wish to point out that the process of verifying and evaluating such applications require time. Further, in assessing the question of delay, one has to consider whether the alleged event relied on by the contractor falls on the critical path. Briefly, the critical path comprises the sequence of activities in a construction program in which a delay would have the effect of prolonging the overall completion period of the project”

Justice, Warren LH Khoo

An Adequate As-Planned Work Program

- Is it Adequate to later substantiate an EOT Claim?
- What does Adequate mean?
- What standard of work program is required by the Contract?

An Adequate Work Program

- Henry Gantt's bar Charts w/o CPM?
- Software Program with CPM?
- Software Program with CPM & Float?
- Software Program with CPM & Float & Resource Allocation?
- How Detailed Should the Program be?

How Detailed?

- General Activities?
- Sub-activities & trades?
- Location Sequencing details?
- Co-ordination & Interface details?
- Information Requirement details?
- 3rd party or SO approval details?
- Supply lead time details?
- Free-Issue lead time details?
- Temporary Works detailing?

How Detailed?

- Resource Sequencing details?
- Multi-level or multi-trade CPM?
- Logic Links
 - Physical Links (Start-Finish of Activity)
 - Resource Links (Start-Finish due to Resource)
 - Contractual Links (Start-Finish due to Approvals)
 - Strategic Links (Start-Finish with Floats)

Logic Checks & Approval

Manipulated As-Planned Program!

- As-Planned CPN Logic – Ensure it is logical?
- Hidden Floats
 - Sequential Works that can be carried out in Parallel
 - Unidentified Floats
 - Exaggerated late completions of activities
- Exaggerated early completion of activities

Logic Checks & Approval

- Omitted Free Issue delivery dates
 - danger of un-realized lead time
 - leaving it to implications
 - Star trek scheduling
- Unrealistically early Free Issue delivery dates
- Omitted Contractual Logic dates
 - Information
 - Approvals
 - Reviews

Approval of As-Planned Program

- Contractual Document – more weight
- Non-Contractual Document – still evidentiary tool but with less weight
- Approval only on logic!
- Approval but with mitigation obligation (re-scheduling non CPN works)!
- Cuts both ways - Contractor also bound by logic.

Ascon Contracting Ltd v Alfred McAlpine (Isle of Man) Ltd

“I do not accept [the contractor’s] attempts to disown the logic links in its own program”

John Hicks QC

Float

- Does it affect the assessment of EOT?
- Date of Completion Critical Path Activities cannot have float unless:-
 - Contractor planned early completion
- Contractor Planned Early Completion
 - If delayed to Contracted Date of Completion
 - No EOT, no loss & expense, Productivity Loss?

Float

- Free Float (Finish – Start Activity to Activity Float)
- Total Float (Activity to Date of Completion Float)
- Is there a distinction between critical floats and non-critical floats?

Float

- Critical Float
 - minimum planning time required
 - minimum procurement, fabrication & delivery time required
- Non-critical float
 - time safety factor
- Critical float should be identified differently
- Temporary Works Detailing with a critical path to the Permanent Works

Aoki Corp v Lippoland (Singapore) Pte Ltd

“Delay to activities falling outside the critical path may be absorbed by the “float time” allowed in the program so that the activity will not affect the completion date. There may be further complications where there are concurrent delays or multi-event delays attributable to different factors in which case the architect has to assess the critical cause of the delay and make due allowances, if any, when evaluating the length of extension to be granted.”

Justice, Warren LH Khoo [1995]

Aoki Corp v Lippoland (Singapore) Pte Ltd

“The suggestion in the last sentence of the passage quoted above to the effect that delaying factors outside the critical path program might be absorbed by the “float time” allowed in the critical path program might not be consistent with the basic position at law that the contractor is entitled to have the time initially allowed him by the contract to complete the works initially comprised in the contract, and any “float time” which he has within that over-all time is his for him to use to make up for any delays on his part in executing the works. It is arguable that the float time is in principle not available for accommodating variations and delays emanating from the employer or other delay events in respect of which the contractor is entitled to extension under the contract.”

Justice, Warren LH Khoo [2000]

The Royal Brompton Hospital NHS Trust v. Frederick Alexander Hammond and Others

“Under the JCT conditions, as used here, there can be no doubt that if an architect is required to form an opinion then, if there is then unused float for the benefit of the contractor (and not for another reason such as to deal with p.c. or provisional sums or items), then the architect is bound to take it into account since an extension is only to be granted if completion would otherwise be delayed beyond the then current completion date. This may seem hard to a contractor but the objects of an extension of time clause are to avoid the contractor being liable for liquidated damages where there has been delay for which it is not responsible, and still to establish a new completion date to which the contractor should work so that both the employer and the contractor know where they stand. The architect should in such circumstances inform the contractor that, if thereafter events occur for which an extension of time cannot be granted, and if, as a result, the contractor would be liable for liquidated damages then an appropriate extension, not exceeding the float, would be given.”

Judge Humphrey Lloyd

The Royal Brompton Hospital NHS Trust v. Frederick Alexander Hammond and Others

“What has to be established is the date when the information was actually needed, its absence on that date and the consequences of its absence in terms of time or money (probably both). The Court of Appeal rejected AA’s earlier case. Aldous LJ said:

“79. Mr Bartlett placed the blame upon Brompton for the way that the judge dealt with the timing claim independently from the quality claim. He went on to submit that the findings of fact were conclusive on the issue. I do not agree. I believe that Mr Edwards-Stuart is correct in his submission that clause 5.4 is a term which must be construed as imposing an obligation to provide the drawings when necessary in the sense that the drawings must be provided when actually necessary as opposed to when they were perceived to be necessary. No doubt in most cases the perceived need of a contractor will coincide with actual need, but this may not be such a case. ...”

Judge Humphrey Lloyd

Float & Ownership Belongs to Contractor

- EOT granted if float affected by delaying event?
- Only when the extent of the float used up results in the non-critical activity impacting the Completion Date because it caused a shift of the CP?
- But if it belongs to the Contractor, why show it in the as-planned work program?
- Silence on ownership but with float indicated in work program, should it not belong to Project by implication.

Float & Ownership Belongs to Project

- Either party may use the float period without liability for EOT
- First to use benefits
- Encourages the Contractor never to bother with early start
- Early start and delays occur : loss of productivity, efficiency & idling, not claimable?

Float & Ownership Belongs to Employer

- Contractor must progress by early start and early finish unless delayed by Employer culpable event
- Some Contracts gives right for Employer to instruct early start or otherwise, Contractor can use the float (Employer's option)
- If early start would have reduced effect of Employer culpable delay, it is to be taken into account

Updating the As-Planned WP

- When Contractor wishes?
- When Delay Event is perceived by SO?
- When progress is found to be in variance?
- When Contractor claims or notifies of EOT?
- Any time wished and instructed by the SO?
- Periodical?
- Monitored Updating & Logic Re-checking?

Monitored & Re-checking?

- Avoid Manipulation!
- Misleading Updates due to automatic update
- Failure to reflect actual mitigation
- Failure to reflect accurately any variation impact (omission or addition)
- Allows accurate impact assessments at the appropriate time
- Pro-Contractor because claim is certain
- Pro- Employer because extent of liability is also certain

Great Eastern Hotel Company Ltd v. John Laing Construction Ltd.

“From November of 1997 [the management contractor] seriously unreported [sic] the delays on a monthly basis occurring to the project, against the master program. The most flagrant example according to the [the employer] occurred in December of 1998 when the recovery program... was presented. [The management contractor] reported a 20 weeks delay as against 34 assessed by he experts. During October of 1997 to February of 1998 inclusively a 5 month period, [the management contractor] reported monthly delays to the project of 8 weeks only. Alterations were made to the updated copies of the master program, which had the effect of showing that no further critical delays were occurring during that reporting period, when in fact because of [the works contractor’s] performance the delay to the temporary roof and the consequential effects were much greater.”

Great Eastern Hotel Company Ltd v. John Laing Construction Ltd

“...in my judgment there is no doubt that [the management contractor] did deliberately submit incorrect information on the delay and the causes of the delay. It translates to causal effect... I accept that had [the management contractor] accurately reported delays and faced up to them there would have been little difficulty reorganizing the contract before trade contracts commenced, so that they were properly coordinated in accordance with the actual progress of the project... I accept that is one of the key skills which a [management contractor] is supposed to bring to a project, and that their failure to properly report progress meant that they were unable to do this, and [the employer] and the professional team were not in a position to push [the management contractor] to do so. In consequence [the employer] was exposed to the inevitable claims for prolongation, delay and disruption as a direct consequence of [the management contractor’s] breaches.”

H.H.J. Wilcox

Royal Brompton Hospital NHS Trust v. Frederick A Hammond

“In order to make an assessment of whether a particular occurrence as affected the ultimate completion of the works, rather than just a particular operation it is desirable to consider what operations, at the time the event with which one is concerned happens, are critical to the forward progress of the works as a whole. On the evidence of [the experts] the establishment of the critical path of a particular construction project can itself be a difficult task if one does not know how the contractor planned the job. Not only that, but the critical path may well change during the course of the works, and almost certainly will do if the progress of the works is affected by some unforeseen event.”

Judge Humphrey Lloyd

Henry Boot Construction (UK) Ltd v. Malmaison Hotel (Manchester) Ltd

“[the employer] denies that the Works were delayed by the matters alleged by [the contractor], and asserts that [the contractor’s] analysis of delay is ‘misconceived and flawed’... In short, [the employer] says that the events relied on by [the contractor] did not in fact delay progress of the Works for various reasons. These include the fact that [the contractor’s] assessment of delay was based on a revised program which ignored the true state of the works at the date of the issue, the part of the work affected by the [employer’s time risk events] was not on the critical path, and the fact that ‘[the contractor’s] delay analysis does not take into account any culpable delay on its part or actual delay on its part or actual progress at the time of the events relied upon.”

Henry Boot Construction (UK) Ltd v. Malmaison Hotel (Manchester) Ltd

“I accept the submissions of [counsel for D]. It seems to me that it is a question of fact in any given case whether a [employer’s time risk event] has caused or is likely to cause delay to the works beyond the completion date in the sense described by Colman J. in the Balfour Beatty case.”

Dyson J.



Kemron Environmental Services Corp

“[the contractor] could not begin work until its... design was approved and it submitted its second design within a reasonable period of time after [the employer] improperly disapproved its first design. The only evidence which suggest that [the contractor] might not have been delayed is found in its revised project schedule. However, in as much as it is apparent that the schedules were not updated to reflect contemporaneous events and the record contains no relevant explanations, we find them to be inherently unreliable for purposes of determining the number of days [the contractor] was delayed.”

The Appeal Board, USA

W. G. Yates & Sons Construction Company

“Based on [the contractor’s] failure to segregate the steel work performed after 26 March 1993 into structural steel and miscellaneous steel work, [the contractor’s] failure to provide an updated work schedule for the period after 3 October 1992, and [the contractor’s] own (site diary) entries characterizing much of the work performed after 26 March 1993 as ‘misc steel work’ and structural steel for shops B and the contractor, pumphouse, and administrative offices we conclude that the erection of the structural steel, i.e. the truss erection and fill-in steel, was substantially completed on 26 March 1993 when the [contractor’s supervisor] left the site; and that the work after 26 March did not follow a single critical path but ran through a number of different activities including masonry, carpentry, skin, metal decking and roofing... [the contractor’s] contention that a study was performed from which it was determined it took 4 men 10-11 hours to change one splice plate segment is at best questionable... We conclude the alleged study is nothing more than generalized unsupported self serving opinion testimony which we have held does not reach the level of credible proof.”

The Appeals Board, USA

The Gasman Corporation

“...neither [the contractor] nor its expert ever modified the CPM schedule to reflect [the contractor’s] change in the logic regarding erection of steel. The schedule’s usefulness in evaluating the alleged slab ‘delay’, therefore, is limited... [The] CPM schedule must be current to evaluate project... whether a ‘change’ affects critical path must be determined on basis of conditions existing immediately prior to its occurrence... [The] CPM schedule must reflect actual performance to be reliable basis for evaluating delay.”

L&C Europa Contracting

“In no instance, has [the contractor] attempted to identify and track the allegedly delayed work in the daily reports and account for the delay period. Only the (pre-construction planned program) is in evidence. There are no updated (program) in the record that might demonstrate the relationship of the alleged delays to other work at the site, or the timing and impact of alleged delays on overall completion of the contract. The record does not permit segregation of any delays caused by [the contractor] and/or delays extending over unexplained gaps in [the contractor’s] on site performance.With respect to the nature of the proof offered by [the contractor] generally, [the contractor] for the most part relies on general, unspecific and conclusive testimony that was not credible.”

Motherwell Bridge v Micafil

“This tends to confirm the conclusions which I had in any event reached which is that Mr. Pye’s approach should be accepted both in relation to extension of time under the contract and..... The recent impacted delay analysis included in the Scott schedule meant that the final reception test concluded milestone was delayed from 13.11.1998 to 9.2.1999, a period of 13+ calendar weeks. The delay to the completion of the works was such that Mr. Pye’s evidence is that MBST were entitled to an extension of time of not less than 44 weeks.”

Judge John Toulmin CMG QC

Balfour Beatty Construction Ltd v The Mayor & Burgesses of Lambeth

“the foundation must be the original program (if capable of justification and substantiation to show its validity and reliability as a contractual starting point) and its success will similarly depend on the soundness of its revisions on the occurrences of every event, so as to be able to provide a satisfactory and convincing demonstration of cause and effect. A valid critical path (or paths) has to be established both initially and at every later material point since it (or they) will almost certainly change”

McAlpine Humberoak Ltd v McDermott International Inc

“the Judge dismiss the Defendant’s approach to the case as being a retrospective and dissectional reconstruction by expert evidence of events almost day by day, drawing by drawing, TQ by TQ and weld procedure by weld procedure, design to show that the spate of additional drawings which descended on McAlpine virtually from the start of the work really had little retarding or disruptive effect on its progress. In our view, the Defendant’s approach is just what the case required.”

Llyod L.J.

Progress Reports

- Daily & Monthly Reports?
- But are the Contents Adequate?
- Are the Veracity of the Reports intact?
- Probative Value? 
- Minutes of Site Meetings?
- Correspondence?

Contents of the Progress Report

Apart from the Normal Information:-

- Affect of the Weather on the Work Condition?
- Works Performed – Cross Referred to WP?
- The Measure of the Works Done?
- Time Spent by Resources & Down/Idle Time?
- Reason for Down/Idle Time?
- Resource Transfers & Reasons?
- Mitigation Steps?

Contents of the Progress Report

- Materials Received?
- Variation, Rectification, Inspection, Re-opening Works Identified?
- Works affected by RFI (Information & Inspection) Identified?
- Delays & Disruptions Identified & Reasons
- Resources affected by Delays & Disruptions Identified?
- Accidents & Site Visits?
- Corroboration = Progress Photographs or Videos

Veracity of the Reports

- Approved/Agreed? – COW/ PM/Consultants?
- Contemporaneity? – daily & prepared daily?
- Neutrality? – Favourable & Adverse
- Formal & Consistent – Format & Process?
- First Hand Recorder – Not hearsay? Weight?
- Security? Multiple Copies?
- Distributed & Unchallenged?
- Consistency with other Documents? External & Internal

Veracity of the Reports

- Legible Handwriting?
- Information within contradictory?
- Photographs not labeled?
- Photograph location not identified?
- Date & time of photograph not identified?
- Sub-contracted Works : no records?

Notice Requirements

- Condition Precedent = Must be clear
- Ambiguities = Contra Proferentum
- Time Frame Unreasonable or Impossible
- Matters known by the Parties/SO
- Prevention Principle Overrides the Notice Requirement (Gaymark Investments v Walter Construction Group)
- No prejudice to the Employer – No mitigation process
- Notice of Delay to Date of Completion or Progress ?
 - Disruptions & Productivity Loss Notifications
 - Mitigation?

Prospective or Retrospective Assessment of EOT

- Truly Prospective – Likely/Probable Delay
 - Does not consider Mitigation Effects
 - Unless Recovery/Catch-Up Program Issued
 - Without prejudice recovery/catch-up programs and constructive acceleration
- Prospective in relation to the Completion Date but Retrospective in relation to actual impact of Delay to Progress
- Truly Retrospective – towards end of Project
- Arbitrator – to follow requirement of Contract

Mitigation

- Common Law Mitigation To Reduce Damages
 - Reasonable steps which are feasible
 - Does not cause serious financial impact
 - Question of Fact, Not Law
 - Onus is on other Party to Proof No Reasonable Mitigation
 - Cost Incurred in Mitigation Recoverable

Mitigation

- Contractual Obligation to Mitigate Delay
 - If could wholly Mitigate but did not = Contractor's Culpable Delay (RP Wallace Inc v The US)
- Best Endeavors
 - Steps that are within the power and ability but limited to those that are in self-interest to achieve endeavors
- Joint Effort Mitigation is Needed – NEC Contracts

NEC

- Stop fighting and get on with the job
- Problem solving
- Management procedures

- Bonus for early finish
- Low performance damages
- Penalty - 25% deduction from payment if fail to provide and update work program
- No end float

- “early warning procedure” – delay & cost
– Risk reduction meeting
- “compensation events” – delay & cost mitigation steps

-
- Compensation Event – to claim extra \$\$
 - Variations
 - Loss and expense

- Written notice
- Quotation
- Program effect

Method of Impact Analysis

- Impacted As-planned Method
- As-Planned v As-Built Method
- Snapshot Time Impact Method
- Collapsed As-Built Method
- Windows or Slicing Method

Impacted As-Planned

- Treats the As-Planned Non-Updated Program as written in stone
- Critical Path never changes
- Can be based upon updated as-planned programs although it could reveal delays by Contractor
- Ignores the actual happenings in the site except for the delay events claimed
- Assumption that Contractor has been perfect with zero problems and exactly on schedule but for the claimed event
- Even so, why not updated? If not obliged? Some factual evidence of Contract inefficiency will destroy the method

As Planned v As-Built

- Comparison of As-Planned & As-Built with some identification of what caused the delay
- Superficial method
- Fails to consider knock-on effects
- Concurrent delays are ignored

Time Impact Method

- Can be manipulated!
- Danger if it ignores some actual facts
- Need to be aware of actual progress when relevant delaying event actual impact being considered
- Prior delays could have been recovered
- Prior delays could have actually had lesser impact than projected on program

Skanska Construction UK Ltd (formerly Kvaerner Construction Ltd) v Egger (Barony) Ltd

“It is evident that the reliability of Mr Pickavance's sophisticated impact analysis is only as good as the data put in. The court cannot have confidence as to the completeness and quality of the input into this complex and rushed computer project. The impact analysis was primarily concerned with the critical path analysis of delays and for its intended logic to work it needed a network, thus the contract program originally in bar chart form, graphically expressed using Power project format had to be reconstructed in network form, together with the construction program produced by Skanska in May of 1997. The tender program reference 100 was submitted to Egger in April and in the course of post-tender reports developed into version 100B reflecting changes in key dates such as Process Entry and Practical Completion for various construction zones.”

Judge David Wilcox

Skanska Construction UK Ltd (formerly Kvaerner Construction Ltd) v Egger (Barony) Ltd

- *“Mr Pickavance stated that the effective application of Power Project with its inherent limitations was also dependent upon the "intuition" of its user. A term, it seems, that includes the power of selection of facts and interpretive judgment of them. As a criticism, it is difficult to see how this differs from the process followed and applied by Mr Pickavance's own team of assistants prior to input into his computer program. Mr Simpson was available to be cross-examined and his judgment and interpretation was apparent and could be tested. I was not impressed with the evidence of Mr Pickavance for the reasons I have set out above. It was not thorough. It was not complete. He only directly considered critical delay and did not really address disruption and he proceeded from the wrong premise in relation to sub-contract periods which proceeded on the basis of that which is agreed between SCL and the sub contractor.*
-

Skanska Construction UK Ltd (formerly Kvaerner Construction Ltd) v Egger (Barony) Ltd

“Mr Pickavance derived notional sub-contract periods from his reconstructed tender and in the reconstruction based upon the SCL three page operational program of May of 1999. He stated that for NG Bailey the contract period commenced on 12 May 1997 and ran to 30 January 1998 based on these baseline programs. In fact the sub-contract was not entered into by NG Bailey until July and work then commenced. Mr Simpson's evidence is subject to the limitations of the system that he used, the integrity of his judgment and the accuracy of his recollection. I have dealt with the first, I am impressed by the second and as to the third, as with any honest witness recollecting complex matters of long ago, he is not as Mr Davies' skilful testing in cross-examination revealed, wholly infallible where his recollection is unaided. I preferred the evidence of Mr Simpson as to programming and planning matters to that of Mr Pickavance.”

Judge David Wilcox

Leighton Contractors (Asia) Ltd v Stelux Holdings Ltd

“If Leighton was still working on the substructure when it requested tender information from Stelux, the information could not then have been necessary. Due to Leighton’s own substantial delay, there was ample time for the information to be provided much later, even after the original program date. On the facts found by the Arbitrator, the tender information can neither have been “necessary” when requested by Leighton nor out of “due time” when provided by Stelux.”

Hon. Reyes J

Leighton Contractors (Asia) Ltd v Stelux Holdings Ltd

“In the actual circumstances of the case, looking prospectively from the time of Stelux’ initial failure to provide information, Stelux’s failure could not have be causative of delay. The late information could not cause actual delay, having regard to the state of the works at the time when the information ought to have been furnished originally”

Hon. Reyes J

Leighton Contractors (Asia) Ltd v Stelux Holdings Ltd

“The Arbitrator found against Leighton on actual delay. She further held that, given Leighton’s pleaded case and the facts as found by her, she did not have to concern herself with “likely delay” under cl.23. In those circumstances, it is not surprising that the Arbitrator found time slice methodology of little help. Stressing prospective delay regardless of actual delay, time slice methodology would have been of limited relevance.....”

Hon. Reyes J

Leighton Contractors (Asia) Ltd v Stelux Holdings Ltd

“The analysis pressed by Mr. Menyhart (Leighton’s expert) focused on the prospect of delay resulting from an event at a given time, regardless of whether in retrospect the event had actually caused delay. The Arbitrator rejected Mr. Menyhart’s analysis entirely. In contrast, the Arbitrator found the evidence of Mr. Foan (Stelux’s expert) more helpful. He also used “time slice” methodology. But his approach was different in focus. The Arbitrator observed that Mr. Foan “does not consider off-site delays until they affect “on-site” activities and then only to the extent that they do....”

Hon. Reyes J

Concurrent Delays

“Can’t separate the wheat from the chaff”

- True Concurrent Delay
 - Contractor culpable and Employer culpable events commence at the same time to the same critical item of work and has the same delaying effect
- Concurrent Delaying Effect
 - Distinct Delays to distinct items of works but both result in the same critical delay period
- Strict Prospective Time Slice Delay Assessment
 - Chances of concurrent delays slim

What are Global Claims

- No nexus between specific causes to specific effects to specific loss.
- Total costs claim
 - one lump sum claim for all causes to effects
 - actual costs minus planned costs
- Rolled up claims
 - many causes to one effect
 - many causes to many effects

Why Global Claims

- How the Courts were won at pleading stage
 - construction claims are highly complicated
 - many overlapping causes causing overlapping effects
 - impracticable or impossible to accurately apportion damage to particular causes/effects
 - impracticable or impossible to link causes to effects
 - perhaps influenced by the belief that at the hearing
 - experts will crystallize the nexus
 - evidence of the facts will support the nexus

At Hearing Stage

- Courts insist on evidence of nexus
- Warned that if one cause fails or one effect fails – all fails (causes, effects & sums)
- Many causes to one effect, one cause proven is sufficient for the total costs claimed

Weakening of the Standards of Proof for Cause to Effect

John Doyle Construction Ltd. v Laing
Management (Lord MacFadyen)

- Accepts the need for proof of nexus
- Accepts the logic of the warnings
- However provides subjective rescue options
 - common sense approach providing any cause still standing is dominant; or
 - subjective assessment of apportionment providing cause still standing is material although not dominant.

Criticism of John Doyle

- There ought not be rescue options
- Dominance is in any event the test to prove causation or nexus – if dominance existed no need for rescue
- Material is also a term used to establish the effective causation
- Judge seems confused as to dominance -v- material
- Ignores adversarial system of parties proving the apportionment
- Ignores natural justice – no opportunity to the respondent to address the subjective apportionment exercise of the Courts
- Never considered the availability of technology and scientific tools of proving cause to effect

General Criticism of Global Claims

- Computer aided tools allow practicability and in fact, ability to prove nexus
- Forest technique of pleading
- Evidential burden switches to respondent to analyze claimant's causes to effects
- Proliferation of time and costs
- Allows bogus claims and 'hopeful' claims
- 'throwing enough mud in the hope that some will stick'

LAD & Time At Large

- “penalty” for finishing late
- True rationale:
Employer would have had to incur costs for prolongation – compensation

LAD & Time At large

- Intended to represent an estimate of the Employer's actual costs for the prolongation

LAD & Time At large

- But abused by most employers
- Excuse to charge a prohibitively high figure.

LAD & Time At large

- Anyway, good for negotiation at Final Account stage!

LAD & Time At large

- In UK – it must be a “genuine pre-estimate” of the loss.
- Otherwise it is a “penalty”
- – Not enforceable
- – intention shouldn’t be to punish contractor

LAD & Time At large

- In Malaysia – slightly different.
- Because penalties are OK
- s75 Contracts Act
- But all is not lost
- Case law interpretation is to contractor's advantage.

LAD & Time At large

- Employer must prove his ACTUAL loss
- s75 Contracts Act – reasonable compensation not exceeding amount stipulated as penalty

LAD & Time At large

- Where the actual loss is capable of being ascertained, then Employer gets that figure
- If it is too difficult to ascertain, then Employer gets “reasonable compensation not exceeding LAD figure”
- Selvakumar a/l Murugiah v Thiagarajah a/l Retnasamy [1995] 1 MLJ 817 -

LAD & Time At large

- How to prove actual loss?
- Show every salary slip of project staff, every office rental receipt, every consultant invoice, time sheet, lost revenue, financing costs, inflation, LAD payable above, etc

LAD & Time At large

- Defeats purpose of LAD clause

LAD & Time At large

- How is it different from UK?
- In UK, even if Employer didn't suffer loss, he can charge LAD. *BFI v DCB*
- In Malaysia, he can't.

LAD & Time At large

Solution?

LAD & Time At large

- PAM'98 clause 22.2 – “LAD is deemed to be the actual loss Employer will suffer”

LAD & Time At large

- PAM 2006 clause 22.2 – “LAD is a genuine pre-estimate of the loss or damage Employer will suffer”
- Not tested yet.

LAD & Time At large

- Trend has been favoring the imposition of LAD
- – “loss difficult to ascertain”

LAD & Time At large

- Practical issues:-

Challenge 1

- If Employer caused the delay
- But contract is silent on EOT for that delay event (act of prevention)
- Can Employer charge LAD?

LAD & Time At large

→ No.

- Dodd v Churton [1897] 1 QB 562
- Sim Chio Huat v Wong Ted Fui [1983] 1 MLJ 151 (Federal Court)

LAD & Time At large

- Employer loses right to charge LAD.
- -“Time at large”
- - Contractor has to complete within a “reasonable time”



LAD & Time At large

Why?

LAD & Time At large

- Because it would be unfair to punish contractor.

LAD & Time At large

- Yet, SO/Architect can't grant EOT because there is no provision in contract allowing them to do so.

LAD & Time At large

- So how do SO/Architects normally solve this problem?

LAD & Time At Large

- Grant an EOT outside the contract (non-contractual) & get contractor to waive their right to loss and expense.

LAD & Time At Large

- Why should contractor give up loss and expense?

LAD & Time At Large

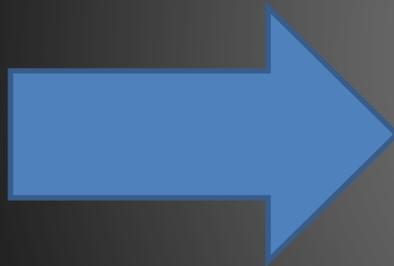
- What's a better solution (for the Employers out there)?
- Pay attention to the EOT clause!
- Have comprehensive grounds on which EOT may be granted
- E.g., PAM – expanded list from 12 to 24 grounds!
- “any act of prevention by Employer”

LAD & Time At large

Challenge 2

- What if contractor applied for EOT
- But Architect/SO doesn't make a decision until after completion date has passed?
- Can Employer still charge LAD?

LAD & Time At Large



Yes ...and No.

LAD & Time At Large

Yes:

- Temloc v Errill [1987] 39 BLR 34
- Aoki v Lippoland [1994]

LAD & Time At Large

- Courts reluctant to punish Employer for Architect's delay – because Employer has no control over Architect.

LAD & Time At Large

- No, contractor becomes entitled to present an acceleration claim:
- Lian Soon Construction Pte Ltd v Guan Qian Realty Lte Ltd [2000] 1 SLR 495
“extension improperly withheld”

LAD & Time At Large

- How else to challenge LAD?
- Attack the CNC

LAD & Time At Large

❖ Certificate of Non-Completion

- Pre-requisite/condition precedent to charging LAD
- No CNC – No LAD
- Bad CNC – No LAD

LAD & Time At Large

- What's a bad CNC?
- A superceded CNC
- CNC issued, then Architect changes his mind and grants an EOT.
- If extended date not met, must issue a fresh CNC
- A. Bell v CBF [1989] 46 BLR 102

LAD & Time At Large

- An unfair CNC
- Architect/SO refuses EOT
- Badly reasoned or no reason given
- Arbitrator later finds EOT ought to have been given

LAD & Time At large

❖ A flawed CNC

- Basis of granting or withholding EOT is flawed
- Then CNC is also flawed
- Tropicon v Lojan [1989] 3 MLJ 216

LAD & Time At Large

- An Unconsidered CNC
- Architect/SO fails to exercise his opinion
- John Barker v London Portman (1996) 83 BLR 31



SCL Protocol

See: Annexure 1 on SCL Protocol

PFE Change Management Supplement

New Techniques in Time Management Mitigating Delay & Impact

- Probabilistic Planning
- 4 Dimensional Planning
- Critical Chain Method
- Partnering / Collaboration
- Pix Protocol

Probabilistic Planning

- Use Risk Analysis Software to determine the probability of the occurrence of the risk and its financial & time impacts on the Project
 - *Primavera Monte Carlo, Pertmaster Project Risk/Risk Expert, Intaver Risky Project, Palisade @ Risk for Project, Projistic etc*
- Premised on the Impact Probability Analysis, determine the likelihood & impact effects of probable delaying events to determine time planning, floats & mitigation strategies

Probabilistic Planning

Capability of Risk Analysis Software :-

- Estimation of the success rate of finishing project on time and within budget
- Determination of crucial tasks with most risk exposure and most likely to delay project
- Estimation of the chances of finishing project by a certain date
- Estimation of how much the project likely to cost after incorporating the risk mitigation measures

Probabilistic Planning

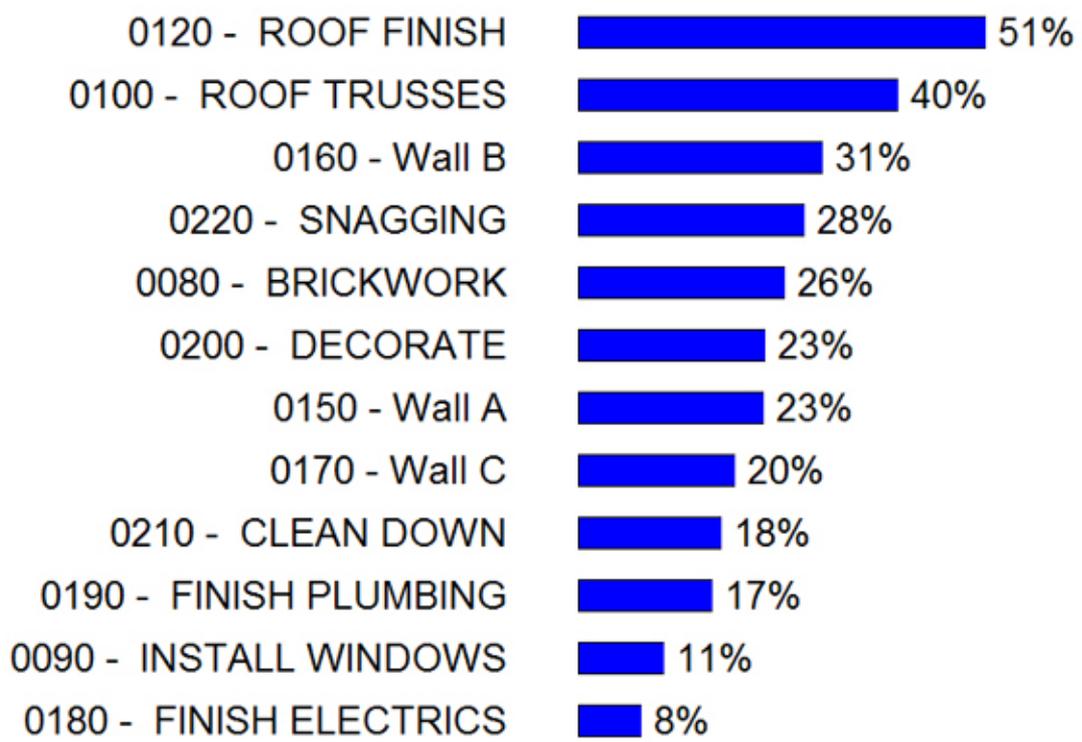
Benefits of Risk Analysis Software :-

- Functionality and usability for all levels
- Save time and effort
- A comprehensive risk database can be built for future projects reference
- Results presented in templates and charts for professional and straightforward reporting



House Construction

Criticality x Duration Sensitivity



Analysis

Simulation: Latin Hypercube
Iterations: 1000

Cruciality measurement

Cruciality = sensitivity x criticality

Sensitivity measurement

Spearman's rank correlation
Measured Against: Entire Plan

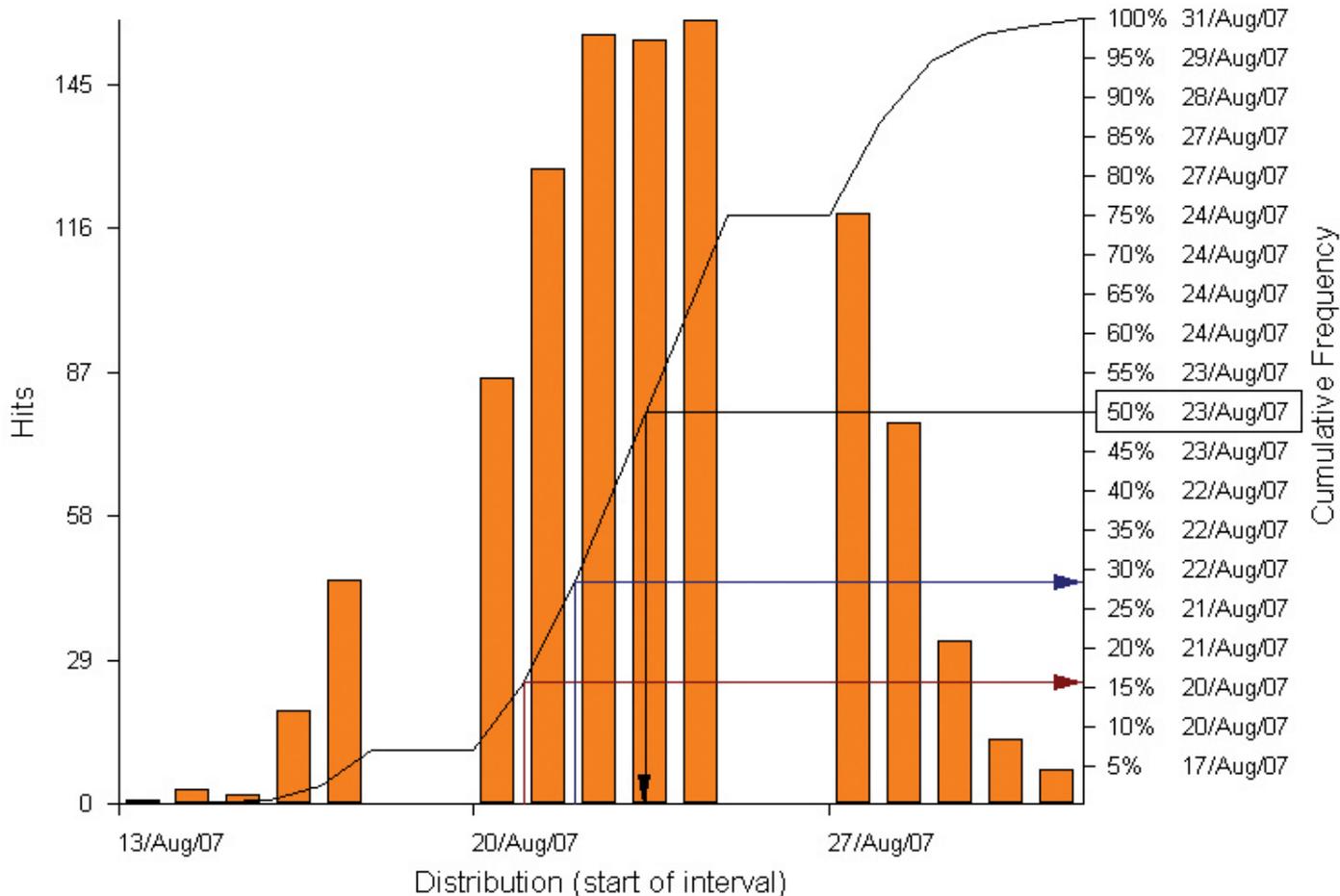
Display settings

Normal tasks only
Showing 12 highest tasks



Office Building Addition

Entire Plan : Finish Date



Analysis	
Simulation:	Latin Hypercube
Iterations:	1000
Convergence	
Plan Finish Date:	
Converged in 200 iterations	(variation < 1% over 100 iterations)
Total Plan Cost:	
Converged in 200 iterations	(variation < 1% over 100 iterations)
Statistics	
Minimum:	13/Aug/07
Maximum:	31/Aug/07
Mean:	23/Aug/07
Max Hits:	158
Std Deviation:	3.266
Selected Confidence	
50%:	23/Aug/07
Deterministic Finish:	20/Aug/07
Probability	16%
Target Finish:	21/Aug/07
Probability	28%

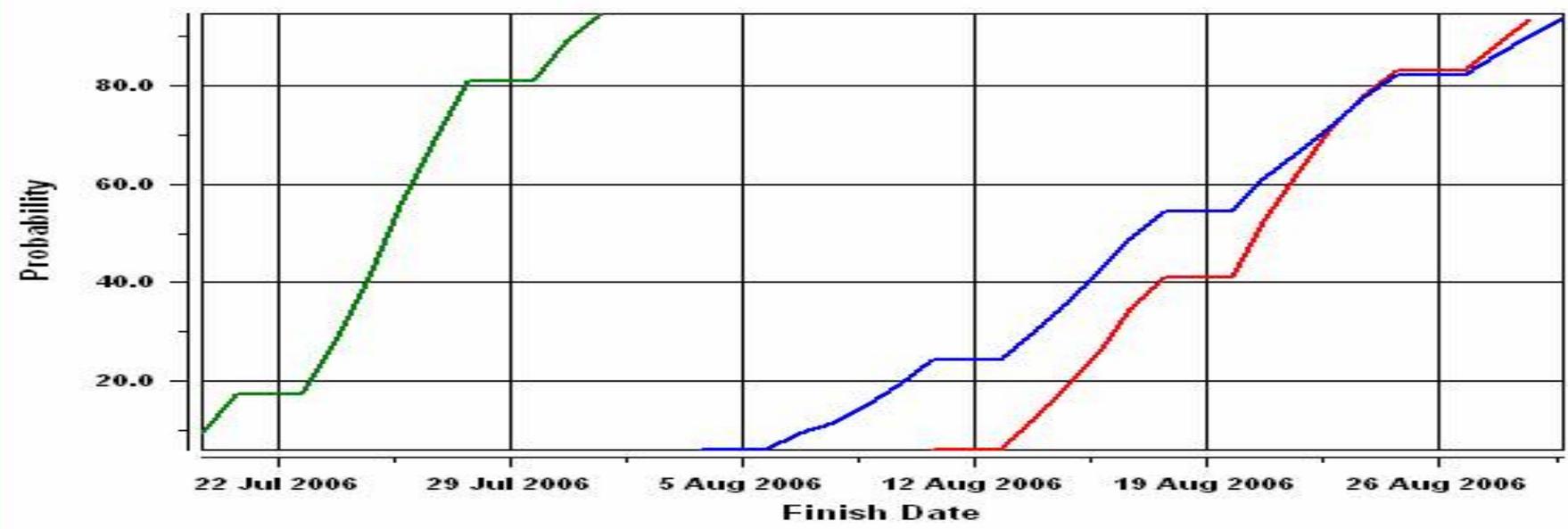


Pertmaster Comparative Risk S-Curve



Results for: Entire Plan

- Scenario C
- Scenario B
- Scenario A



Percent	Scenario C	Scenario B	Scenario A
90%	28 Aug 2006 17:00	28 Aug 2006 17:00	31 Jul 2006 17:00
80%	24 Aug 2006 17:00	24 Aug 2006 17:00	27 Jul 2006 17:00
70%	22 Aug 2006 17:00	22 Aug 2006 17:00	27 Jul 2006 17:00
60%	20 Aug 2006 17:00	21 Aug 2006 17:00	26 Jul 2006 17:00
50%	17 Aug 2006 17:00	20 Aug 2006 17:00	25 Jul 2006 17:00
40%	15 Aug 2006 17:00	17 Aug 2006 17:00	24 Jul 2006 17:00
30%	14 Aug 2006 17:00	16 Aug 2006 17:00	24 Jul 2006 17:00
20%	10 Aug 2006 17:00	15 Aug 2006 17:00	23 Jul 2006 17:00
10%	07 Aug 2006 17:00	13 Aug 2006 17:00	20 Jul 2006 17:00

Show data table

View in Excel

Close

4/5 Dimensional Planning

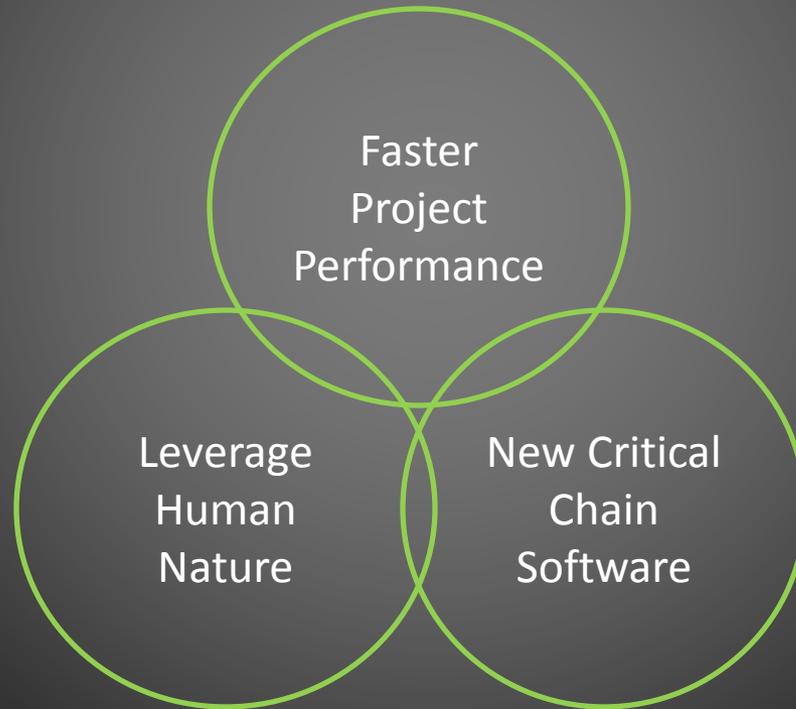
- Integration between Scheduling & Design & Drawings & Take-offs & Budgeting
- Using Auto-CAD or BIM (building information modeling – the 4D CAD)

“digital technology to establish a computable representation of all the physical and functional characteristics of a facility and its related project/life-cycle information, [that] is intended to be a repository of information for the facility owner/operator to use and maintain throughout the life-cycle of the facility”

National Institute of Building Sciences

Critical Chain Method Not Critical Path

Dr. Eliyahu Goldratt's



What is the Critical Chain Syndrome?

- Human Factor – Efficiency ↓ & Time ↑
- Safety Factor – Planning Hidden Floats is Natural
- Student Syndrome – If there is time, task will be delayed reducing safety factor and when delaying event occurs, balance safety factor insufficient
- Parkinson's Law – the Work will expand to fit the entire allotted time with safety factor

What is the Critical Chain Syndrome?

- Multi-tasking at a project to show progress on all fronts : leads to disorganized chaos, un-optimum sequence and all task likely to complete later
- Early Finish : Illusion of Over-estimating Time during As-Planned & No Reward only
Accusation

Critical Chain Project Management

- Backward Scheduling from target end date
 - Focus on Completion Date & not Start Date
 - Removes Unnecessary task dependencies
 - Reduce Task & find most efficient routes
- Scheduling as late as possible commencement dates and not as early as possible dates
 - Minimize work in progress
 - Focus on the criticality of completion
 - Protect Productivity & Efficiency
 - Prolong preparation & knowledge gaining periods

Critical Chain Project Management

- Pooling the floats & safety period to buffer periods for whole project and not task specific
- Updating activity progress showing delays does not mean actual delays
- Plan for the probable delays using probability estimation tools & factors
- Utilise Resource Leveling backwards to reduce impact of larger probability delays

Critical Chain Project Management

- Identify the Critical Chain Task based on task dependencies and resource dependencies (CPM is only task dependencies)
- Place the pooled floats at the Project End Buffer (whole project shock-absorbers) and at the Feeding End Buffers (between the non-critical chain task feeding or possibly impacting into the Critical Chain Task)

Critical Chain Project Management

- Tracking Mode will identify the Earlier Planned Completion Date without the Project End Buffers
- Each Activity Team & Leader is working towards protecting the related buffers and the Project End Buffer
- Relay Race Approach for Linked Critical Chain Task
- Buffer Management with degrees of Alert Actions
- Drum Resource Management – Recognizing the resource in highest demand and lowest supply – the Project bottlenecks

Partnering?

- A commitment to maintaining cost-efficiency in the project
- A structure that allows a win-win situation if cost is minimized by share of cost savings
- A collaborative approach between contracting parties where mutual objectives are made known and agreed, methods of resolving disputes are devised and constant teamwork and good faith procedures are encouraged

Partnering?

- Requires both senior management and site management staff to be committed to a relationship and method of dealing with each other to achieve the mutual objectives under a “Partnering Charter”
- Partnering Charter can be made a contract document
- Constant workshops, open communications and trouble-shooting are worked upon by both parties
- An attempt to maintain the same site team, throughout the project

Pix Protocol

- Project Information Exchange (PIX)
- Electronic Data Interchange Agreement
- Agreeing on a Pix Protocol covering:-
 - Client's Information Needs: Fixed Formats & Timing
 - Electronic Information: Agreed Formats & Rules of Usage
 - Design: drawing origins, coordination formats
 - Document Management : File naming & numbering systems
 - CAD modeling protocols & principles
 - Project Communications: E-Mails Distribution Policies

PIX Protocol?

- The differences that cause the delays, red-tape & disputes:-
 - Information transfer
 - Information handling
 - Chain of scrutiny & approvals
 - Sharing and re-use of information
 - Trust & Reducing Team Conflicts