



Shootout at the OK Corral

Did You Notice Me?

Mock Trial 2008

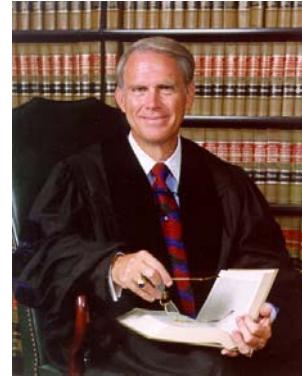
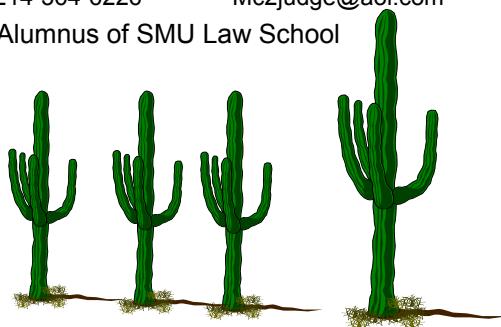


Historical Note – Jim O'Brien and Fred Krietzburg were the founders/owners of legendary O'Brien-Krietzburg CPM consulting firm – known as OK or OKA (associates.) Thus when first creating this mock trial series, with Jim as one of the experts, the “Shootout at the OK Corral” motif was adopted and is still generally understood by Schedulers old and young.

Hon. John M. Marshall

Presiding

- Senior Judge of the 14th Judicial District Court, Dallas County, TX
- MC² LEGAL, PLLC
3418 Daniel Avenue, University Park, TX 75205
214-364-6226 Mc2judge@aol.com
- Alumnus of SMU Law School



by Fred

The Hon. John M. Marshall will be presiding today. Our court system has some impressive looking buildings. Our Legislatures pass some fancy looking laws. Our Executives may strut before us to the tune of "Hail to the Chief." But it is the Judge who **is** the law.

At our first session in 1998, when Dan's partner Bob Meyers swore expert Jim O'Brien in at the start of the trial, he jokingly said "this doesn't really count because we're not in a real courthouse." Judge Marshall interrupted, and reminded Bob and all of us, "**The Court is where I sit.**"

I hope all goes well at today's mock trial, but I have brought my toothbrush along, just in case!

Daniel D. McMillan, Esq.

Attorney for the contractor

- Jones Day
555 South Flower Street, 50th Floor
Los Angeles, CA 90071
(213) 243-2582 DDMcMillan@jonesday.com
- Co-chair of Jones Day's Domestic and International Construction Law Practice
- Author
 - "Federal And State False Claims Acts And Public Construction Projects"
 - "An Owner's Guide to Avoiding the Pitfalls of Disputes Review Boards"



by John

Dan will be acting as the attorney for the contractor today

<<need additional bio data>>

Jeffrey B. Kirzner, Esq.

Attorney for the owner



- Jones Day
555 South Flower Street, 50th Floor
Los Angeles, CA 90071
(949) 553-7533 jkirzner@jonesday.com
- Member of Jones Day's Domestic and International Construction Law Practice
- Has represented Owners in major construction cases including:
 - Orange County Transportation Authority • County of Los Angeles
 - Los Angeles County Metropolitan Transportation Authority
 - County of San Bernardino • San Bernardino County Flood Control District



by Dan

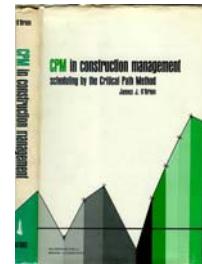
Jeff will be acting as the attorney for the owner today

<<need additional bio data>>

James J. O'Brien., P.E.

Expert for the Contractor

- founder O'Brien-Kreitzberg Associates
- currently “trying to retire” – private practice
2 Linden Avenue Riverton, NJ 08077
856-829-9480 jimobriendd527@aol.com
- Scheduler -- CPM since 1962 -- 45 years
- Construction Engineering since 1955 – 50+ years
- Professional Engineer -- 6 states
- Author: *CPM in Construction Management*
--and 12 other books
- PMI, CMAA, AACEi, SAVE and ASCE



By Fred – Jim O'Brien needs no introduction – by some considered “Father of CPM” – while did not invent CPM, did effectively introduce it to world with industry bible CiCM

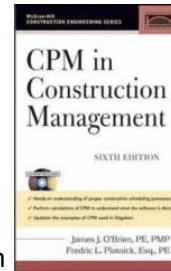
Cannot be here in person today due to a case calling him out to Seattle, WA. But he will be here in video clips, and “who knows?”

Frederic L. Plotnick, Ph.D., Esq., P.E.

Expert for the Owner



- Engineering & Property Management Consultants, Inc.
Colonade Manor #117 Jenkintown PA 19046
www.fplotnick.com 215-885-3733 fplotnick@fplotnick.com
- CPM Scheduling since 1975
- Professional Engineer and Attorney -- PA, NJ, FL
- Professor of Engineering -- Drexel U. – Philadelphia, PA
- Co-Author: *CPM in Construction Management*
- Past President NSPE/PSPE-Philadelphia Chapter
- Member ASCE, AACEi, PMI, ABA Forum on Construction



By John

Fred Plotnick is one of our regular speakers at our annual User Conferences on the interface between engineering, construction, software applications and the law. Fred has worked with Primavera almost from our beginnings assisting with technical and practical use issues. Mr. Plotnick is one of the pre-eminent theorists in CPM analysis and is the added author to Jim O'Brien's classic [CPM in Construction Management](#).

Fred is here at our User Conference with his wife, Kim, ...

As well as overall coordination and moderator, Fred will be the expert witness for today's presentation and therefore has the honor of deliberately making mistakes for the two attorneys to capitalize upon. He reminds you that next month's courtroom may feature you and hopes that you do not make the same mistakes.

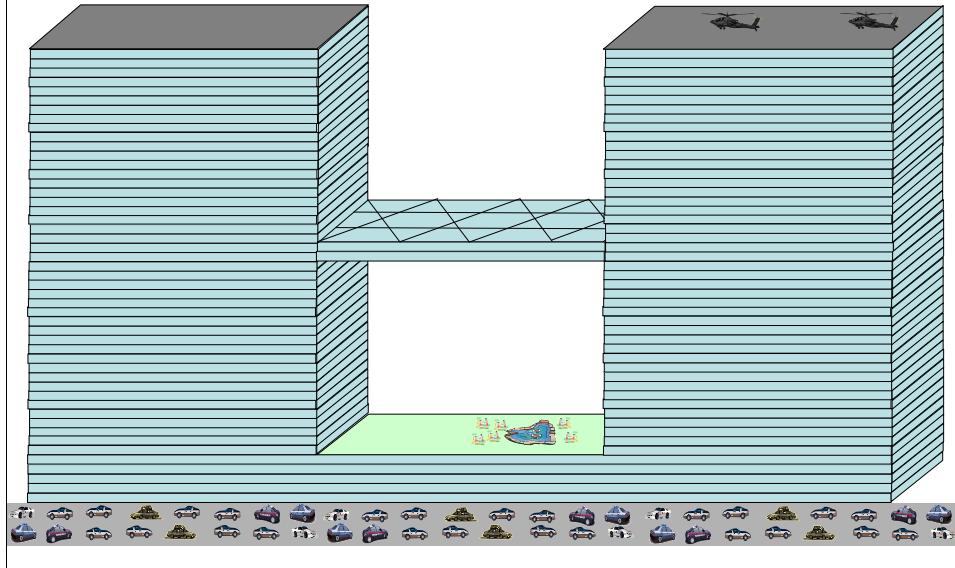
Shootout at the OK Corral

- Courtroom exhibits will be introduced as part of the trial
- Testimony of James J. O'Brien will be by videotaped deposition
- Testimony of Fredric L. Plotnick will be live and unscripted
- Judge Marshall and the attorneys will also instruct the audience on good and bad behavior by an "Expert" and courtroom dynamics
- Six members of the audience will be chosen to be the Jury
- The facts of this presentation are fictional and any resemblance to actual events is purely coincidental



By Fred - intro to today's show

The Bridge Hotels and Casino



By Fred

The Bridge Hotels and Casino is a 49 story structure consisting of two floors of casino, restaurants and entertainment, three floors of parking garage, and two 44 floor hotels placed above the parking garage. A feature which highlights this structure and gives it the Bridge name is a skybridge connecting the two towers at the 21st and 22nd floors. The skin of the two towers is floor to ceiling glass panels affixed to a specially fabricated frame system, which in turn is affixed to the structural steel and floor slabs at each level. Another feature is the glass ceiling and glass floor of the skybridge. Patrons may look down through the 21st floor straight into the hotel pool below. This is usually not recommended after losing heavily at the tables.

Both the glass panels and frame are fabricated overseas and must be transported to the U.S. by ship.

Casino owners – Steve Vincere and Paul Guadagnare – welcome you to a new Vincere-Guadagnare signature project

Explicit Contract Language

“The Contractor shall complete the project not later than 01NOV07. Time is of the essence.
Liquidated damages for loss of casino income shall be \$1,000,000 per calendar day.
Additional actual damages for costs incurred by the Owner shall be assessed in addition to L/D’s.

Note that the casino may not open for business until the hotel and other elements of the project are finished and functioning

By Fred – some interesting contract language on this project

Questions of Law

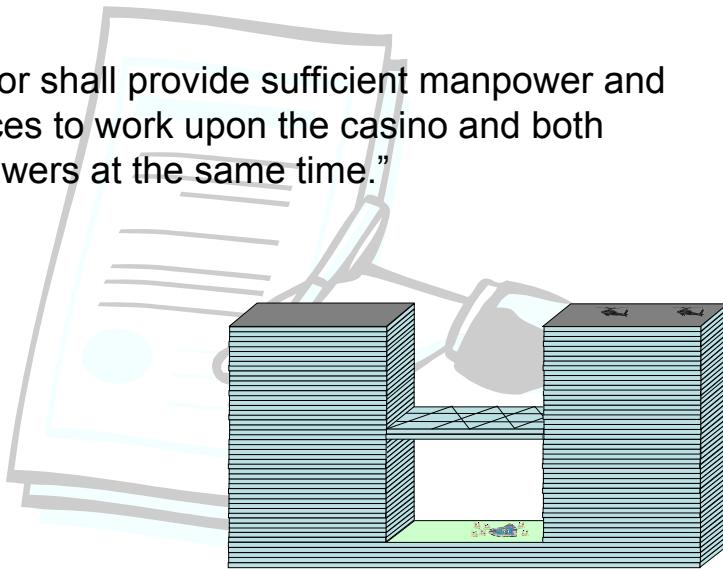
Liquidated damages plus actual damages ...

- Common Law Jurisdictions
- Civil Law Jurisdictions
- Practical Considerations

Dan – Jeff – John – provide insights on this approach

Explicit Contract Language

“Contractor shall provide sufficient manpower and resources to work upon the casino and both hotel towers at the same time.”



By Fred – some interesting contract language on this project

Questions of Law

“Contractor shall provide sufficient manpower and resources to work upon the casino and both hotel towers at the same time.”

- Contractor “Means and Methods”
- Spearin Doctrine
- Practical Considerations

Dan – Jeff – John – provide insights on this approach

Explicit Contract Language

“In the event that the contractor believes that actions or inactions of the owner have caused a delay to the project, the contractor shall notify the owner and shall review and modify its plan of execution to mitigate such delay.”

“In such event, the contractor shall immediately provide the owner with:

- 1) an estimate of the length of anticipated delay without effectuating such recovery plan, and
- 2) an estimate of the cost of effectuating such recovery plan.”

By Fred – some interesting contract language on this project

Explicit Contract Language

“The Contractor shall prepare and submit a CPM schedule to the Owner for the purpose to provide further assurance that the Contractor will meet the Contract Deadline of 01NOV07.

The CPM shall be prepared in general conformance with the text CPM in Construction Management, 6th Edition.

The CPM shall be resource loaded for all major resources.

Non-conformity within the CPM with any other Contract provision, and acceptance thereof by the Owner, shall not constitute waiver of such provision.

By Fred – some interesting contract language on this project

Recommended Contract Language

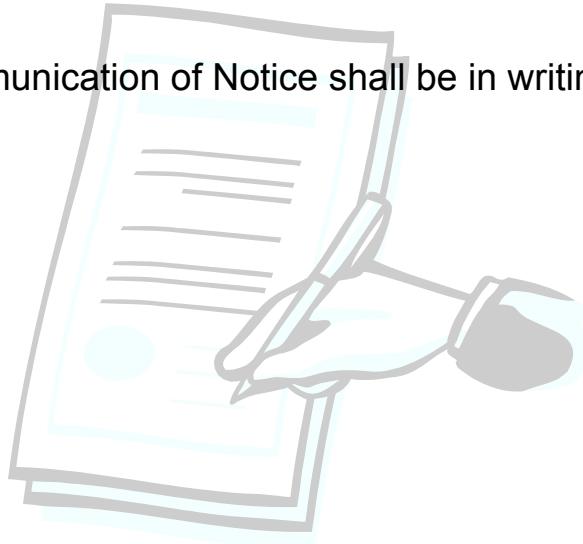
“Each activity in the CPM, other than the first, shall be preceded by a restraint from at least one other activity which is physically required. Additional predecessor restraints may be provided to indicate the Contractor’s preferred allocation of limited resources.”

“The Contractor shall provide a separate Excel file indicating each restraint between activities, whether such is physically required or to allocate resources, and what (if any) resources are allocated thereby.”

By Fred – some interesting contract language on this project

Explicit Contract Language

“All communication of Notice shall be in writing”



By Fred – some interesting contract language on this project

Questions of Law

“All communication of Notice shall be in writing”

- Judicial enforcement of such language
- Actual knowledge – Constructive knowledge
- Digital Communications Act of 2000
- Are progress meeting minutes “Notice in Writing”?
- Is a CPM update submittal “Notice in Writing”?

Dan – Jeff – John – provide insights on NOTICE

Notice Requirements

Contractors use numerous theories in an effort to avoid notice requirements for change orders and claims:

- Waiver: Owner waived contract provisions by conduct or knowledge and acquiescence.
- Estopel: Owner is estopped to assert contract provisions by instructions and representations by subordinate officials.
- Impracticability: Compliance with provisions is impossible or impracticable, or provisions are unconscionable.
- Breach: Owner breached contract and provisions do not apply in cases of Owner's breach.



Strict Application

- Some cases have favored owners and required strict compliance with contract requirements.
 - *Acoustics, Inc. v. Trepte Constr. Co. Inc.*, 14 Cal. App. 3d 887 (1971) (“Compliance with contractual provisions for written orders is indispensable in order to recover for alleged extra work.”).
 - *A. Teichert & Sons, Inc. v. State of California*, 238 Cal. App. 2d 736, 753 (1965) (“Plaintiff’s own contract demanded official change authorizations as a precondition of extra work for extra compensation. In order to demonstrate justified reliance on other kinds of representations or promises, plaintiff would have to plead and prove ignorance of its own contract.”).



Strict Application

- *Bares v. City of Portola*, 124 Cal. App. 2d 813 (1954) (“If appellant intended to seek compensation for any extra work or change, he should have proceeded to get the necessary authorization in accordance with the provisions of the contract.”).
- *Contra Costa Constr. Co. v. City of Daly City*, 48 Cal. App. 622 (1920) (“The municipality had the right to specify in the contract the precise conditions under which alone it would be obliged to pay for extra work. This it did. But this method was not followed by the contractor As this provision of the contract was not complied with there can be no recovery under the express contract.”).



Liberal Application

- But other cases have favored contractors.
 - *Weeshoff Constr. Co. v. Los Angeles County Flood Cont. Dist.*, 88 Cal. App. 3d 579 (1979) (contract requirement for written change orders was waived).
 - *Brinderson Corp. v. Hampton Roads Sanitation*, 825 F.2d 41 (4th Cir. 1987) (“Generally, when the owner has actual or constructive notice of the conditions underlying the claim and an opportunity to investigate, that is sufficient.”).
 - *Hawley v. Orange County Flood Dist.*, 211 Cal. App. 2d 708 (1963) (ten day notice provision “for extra work [claims] did not apply to claims . . . caused by the [owner’s] breach of contract”).
 - *D.A. Parish & Sons v. County Sanitation Dist.*, 174 Cal. App. 2d 406 (1959) (holding that notice of claim provision did not apply; “a forfeiture clause . . . will not only be strictly construed [but does not apply to] breaches of contract caused by the other party”).



Enforcement of Notice Requirements

- Notice requirements are more likely to be strictly enforced in public contracts than private contracts.
- Federal requirements are more liberal than those of many states. *Perini Corp v. City of New York*, 18 F.Supp.2d 287, 293 (S.D.N.Y. 1998) (“Federal law . . . Construes notice provisions of the Changes Clause liberally . . . New York, on the other hand, requires strict compliance with notice requirements in public contracts.”)
- California law requires strict enforcement in public contracts.



Recent California Authority

Important Case From 2007

- *Katsura v. City of Buenaventura*, 155 Cal. App. 4th 104 (2007).
 - Nondescript case involving a contract for consulting engineering services in an amount not to exceed \$18,485.
 - The contract provided that extra work only could be authorized by mutual execution of written amendment.
 - No written amendment was ever executed.
 - The engineer billed the public owner more than twice the contract price, which the City refused to pay.



Katsura

- Following a two-day bench trial, the trial court rejected the engineer's extra work claim and issued judgment against the engineer on that claim.
- On appeal, the engineer argued that the judgment should be reversed because the extra work was necessitated by a breach of contract by the owner, the owner waived its right to enforce the extra work provision because an employee of the owner and the owner's consultant ordered the extra work, and the contract was modified by oral agreement.
- Judgment affirmed (noncompliance with contract requirements barred recovery).



Katsura

“[T]he continuing viability of *Weeshoff* is questionable. In pronouncing that ‘California decisions have also established that particular circumstances may provide waivers of written “change order” requirements’; and ‘[i]f the parties, by their conduct, clearly assent to a change or addition to the contractor’s required performance, a written “change order” requirement may be waived,’ the [*Weeshoff*] court cited cases involving private parties, not public agencies. . . . Since its publication 28 years ago, no case has cited *Weeshoff* for this point. This is understandable as it is contrary to the great weight of authority, cited above, to the contrary.”



Katsura

- “We are not unsympathetic to the seeming unfairness of denying payment for work done in good faith by one who has no actual knowledge of the restrictions applicable to municipal contracts.” *Katsura*, 155 Cal. App. 4th at 111.
- “It may sometimes seem a hardship upon a contractor that all compensation for work done, etc., should be denied him; but it should be remembered that he, no less than the officers of the corporation, when he deals in a matter expressly provided for in the charter, is bound to see to it that the charter is complied with. If he neglect[s] this, or choose[s] to take the hazard, he is a mere volunteer, and suffers only what he ought to have anticipated. If the statute forbids the contract which he has made, he knows it, or ought to know it, before he places his money or services at hazard.” (*Id.* at 111 (quoting *Amelco*, 27 Cal. 4th at 235).)



Other States That Do Not Follow The Federal Standard

Illinois.

Practical Const. Co. v. Granite City Housing Authority, 416 F2d 540 (7th Cir. 1969)

Massachusetts.

Glynn v. City of Gloucester, 487 N.E.2d 340 (Mass. App. Ct. 1986)

Texas.

Interstate Contracting Corp. v. City of Dallas, 407 F.3d 708 (5th Cir. 2005)

New York.

Perini Corp. v. City of New York, 18 F. Supp. 2d 287, 293 (N.Y. App. Div. 1998)



40	40	ZTS/EP06	ZTNOV06	5	PL	S	GS	MTEL/C		Steg's Casino Electric
2	2		17/21NOV06	19EOC06	5	CP	S	DR/WALL		Steg's Casino Drywall & Finishes
Fixtures				19EOC06	19	PL	S	GS	FIX	Steg's Casino Fixtures
Industr	10	10	ZTS/EP06	ZTJAN07	95	HU	S	GS	HVAC/FW	Steg's Casino HVAC Fixtures

By Fred – some comments on the CPM used on the project and to prepare today's show

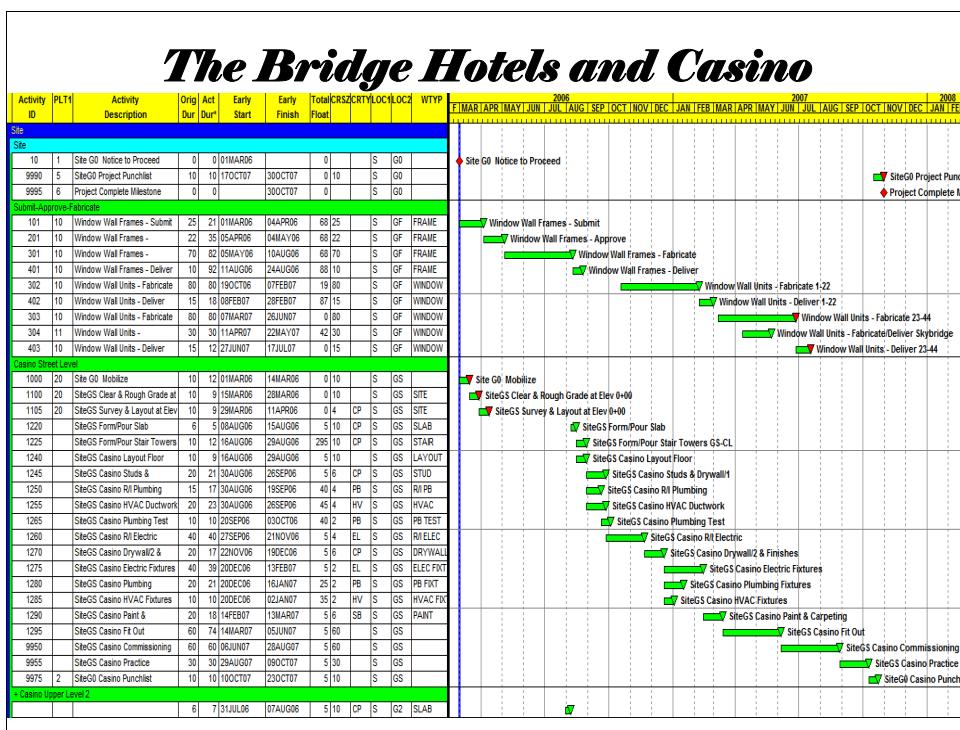
The CPM Schedule

The screenshot shows a software interface titled "Pertmaster Report Viewer". The menu bar includes "File", "Tools", and "Help". The main window displays the "PRIMAVERA Pertmaster" logo. Below it, a section titled "Plan Summary" contains a table of statistics:

Title	
File name	C:\ddata\99P386\conf08\b1ap.plan
Plan finish date	10/30/2007 5:00:00 PM
Plan remaining duration	609
Normal tasks	1176
Summary tasks	0
Milestone tasks	2
Hammock tasks	0
Monitor tasks	0
Calendars	4
Links	2323
Resources	12

1176 activities - 2323 restraints between activities

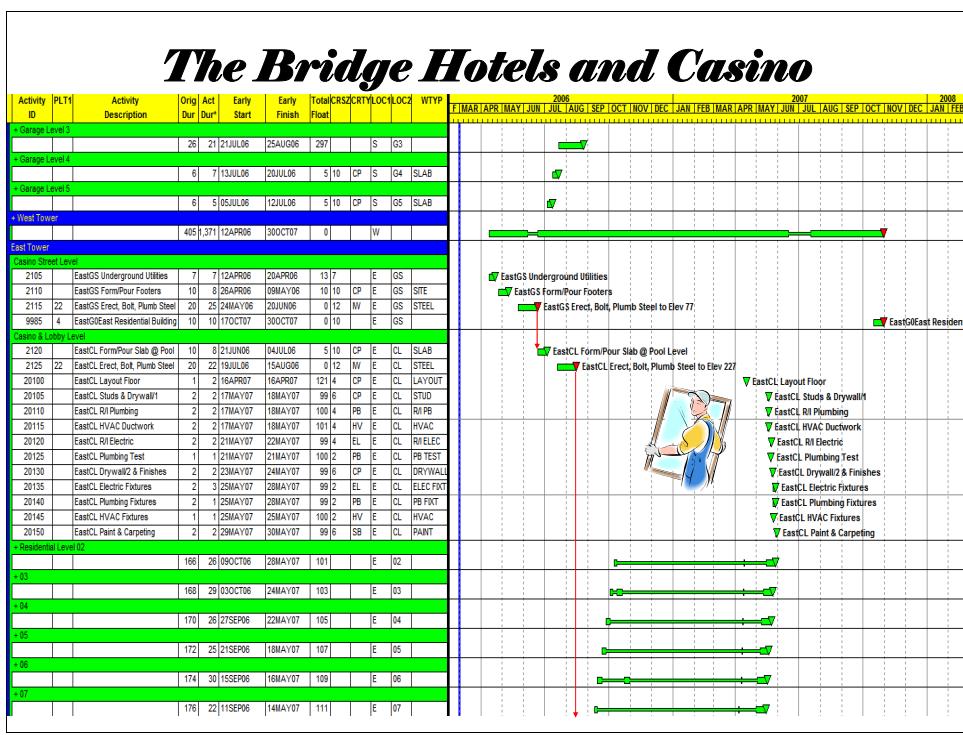
The Bridge Hotels and Casino



In the As-Planned schedule, you will note that the critical path (green bars followed by RED inverted triangles - or with zero total float if looking in the tabular section) starts with mobilization of the site (as is usual) but moves at some point to fabrication of the windows FOR THE UPPER FLOORS only.

We may also note that the amount of float for the casino floor layout through fitout and through commissioning is near critical.

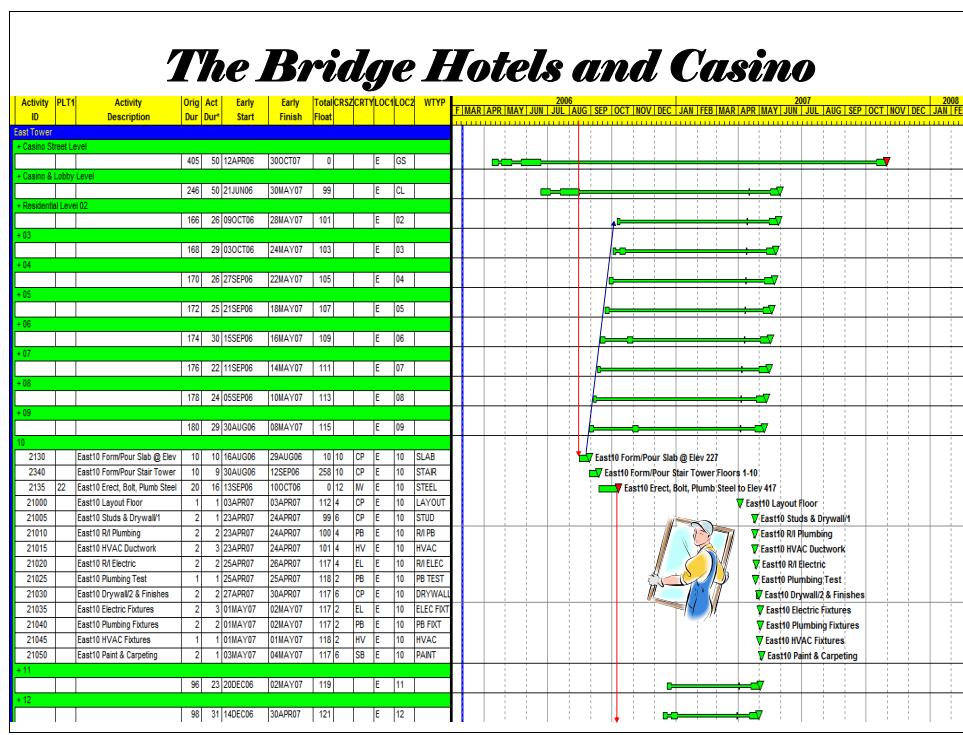
The Bridge Hotels and Casino



the critical path continues from Mobilization through the sequence of rig/set steel to various elevations, and form/pouring a slab at those elevations for purposes of stability before continuing steel to the next level.

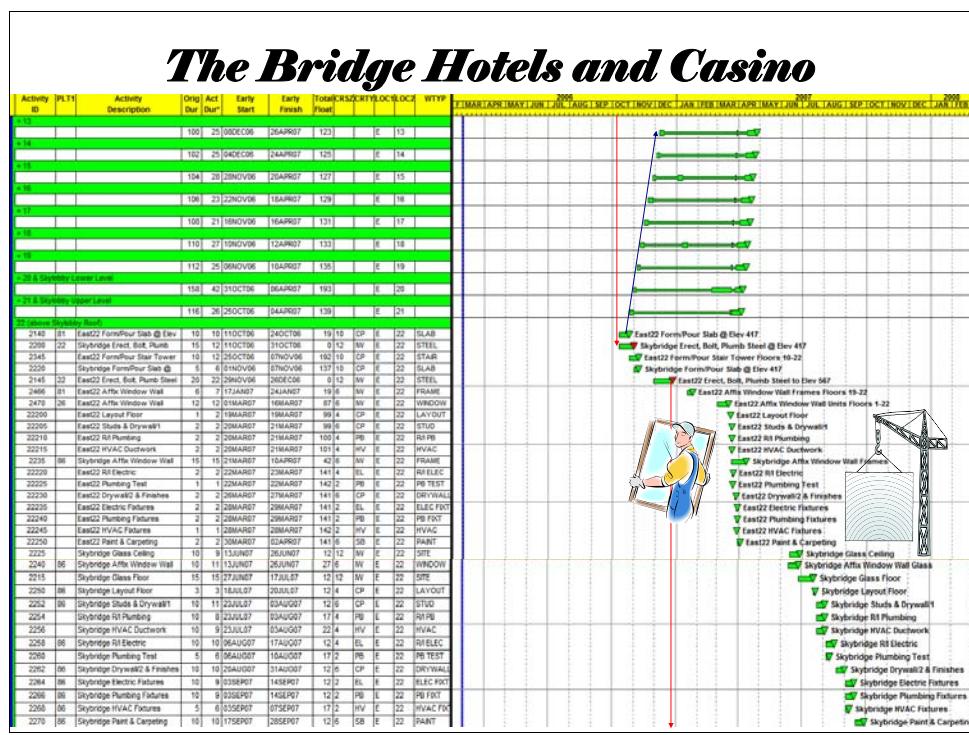
the detail view also shows that once the window skin to the building has been attached, making the interior weathertight, the fitout of hotel rooms on each floor may proceed - note that these typically have a great deal of float.

The Bridge Hotels and Casino



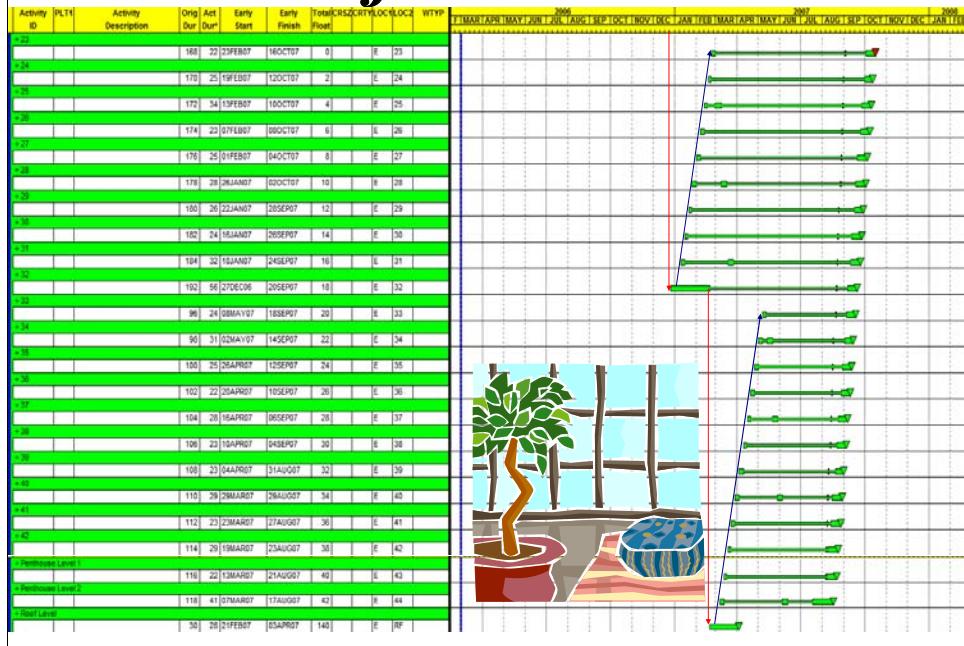
because of the large amount of float relating to interior work, this work has been staggered so as to require only one crew, moving floor to floor, within each section (typically 10 floors) of the building

The Bridge Hotels and Casino



the skytower is a special problem and requires much more detail in planning - note that the work there is near critical - getting as low as 12 days float

The Bridge Hotels and Casino



and so forth to the completion of the project

Delays to the Project Encountered



Activity ID	Title Description	OrigDur	ActDur	Constraint
E001	Event 001 - Delay to Mobilize	1	10	1-Mar-06
E002	Event 002 - Window Frame Approval Takes 35 Days	1	35	30-Mar-06
E003	Event 003 - Ship Hijacked by Pirates	1	92	20-Sep-06
E004	Event 004 - Industry Strike by Dockworkers	1	30	1-Mar-07
E005	Event 005 - Window Connector Design Error - Requires 2X duration to install Floors 1-22	1	24	8-May-07
E006	Event 006 - Skybridge Window Frame Refit / Refab	1	11	23-May-07
E007	Event 007 - Window Connector Design Error - Requires 2X duration to install Floors 23-44	1	24	6-Aug-07



By Fred – describe the causative events encountered

E001 - owner has issue with city permitting, cannot provide site

E002 - owner has 22 days to review submittal per the spec, actually takes 35 days for the window frame submittals

E003 - the ship carrying the window frames is hijacked by pirates and delivery of the frames finally takes 92 days

E004 - delivery of the window is similarly delayed by a longshoreman strike lasting 30 days

E005 - the owner's window frame to window connection design is defective and field installation time is doubled from 12 days to 24 days for each of the four window installation activities (east and west tower, floors 1-22 and 23-44) - this causative event is addressed only to impact on the lower floors

E006 - the interface between frames and windows on the skybridge has issues and 11 days are required to remedy the situation - the contractor blames this on the owner's design, the owner blames this on the contractor's faulty installation

E007 - the owner design error noted in E005 also impacts installation of the windows for floors 23-44

Delays to the Project Encountered



Activity ID	Title Description	OrigDur	ActDur	Constraint
E001	Event 001 - Delay to Mobilize	1	10	1-Mar-06
E002	Event 002 - Window Frame Approval Takes 35 Days	1	35	30-Mar-06
E003	Event 003 - Ship Hijacked by Pirates	1	92	20-Sep-06
E004	Event 004 - Industry Strike by Dockworkers	1	30	1-Mar-07
E005	Event 005 - Window Connector Design Error - Requires 2X duration to install	1	24	8-May-07
E006	Event 006 - Skybridge Window Frame Refit / Refab	1	11	23-May-07
E007	Event 007 - Window Connector Design Error - Requires 2X duration to install	1	24	6-Aug-07

Task Description Predecessor	Constraint	Duration	Task Description Successor	Link	Lag	Link Description
E001 - Event 001 - Delay to Mobilize	1-Mar-06	10	1001 - Site Go Mobilize	fs	0	Ability to mobilize on site delayed 10 days
E002 - Event 002 - Window Frame Approval Takes 35 Days	30-Mar-06	35	201 - Window Wall Frames - Approve	ff	0	Approval requires 35 days rather than 22 max
E003 - Event 003 - Ship Hijacked by Pirates	20-Sep-06	92	401 - Window Wall Frames - Deliver	ff	0	Window frames delivered late
E004 - Event 004 - Industry Strike by Dockworkers	1-Mar-07	30	402 - Window Wall Units - Deliver 1-22	fs	0	Delivery requires 92 days rather than 10
E005 - Event 005 - Window Connector Design Error - Requires 2X duration to install	8-May-07	24	1470 - West22 Affix Window Wall Units Floors 1-22	ff	24	Finish delayed by 2X duration required
E005 - Event 005 - Window Connector Design Error - Requires 2X duration to install	8-May-07	24	2470 - East22 Affix Window Wall Units Floors 1-22	ff	0	Finish delayed by 2X duration required
E006 - Event 006 - Skybridge Window Frame Refit / Refab	23-May-07	11	2235 - Skybridge Affix Window Wall Frames	ff	0	Replacement frames delivered late
E006 - Event 006 - Skybridge Window Frame Refit / Refab	23-May-07	11	304 - Window Wall Units - Fabricate/Deliver Skybridge	fs	30	Loss of Queue - #304 now after #303
E007 - Event 007 - Window Connector Design Error - Requires 2X duration to install	6-Aug-07	24	2670 - East44 Affix Window Wall Units Floors 23-44	ff	0	Finish delayed by 2X duration required
E007 - Event 007 - Window Connector Design Error - Requires 2X duration to install	6-Aug-07	24	1670 - West44 Affix Window Wall Units Floors 23-44	fs	0	Start delayed to after 2670 as only one crane used
E007 - Event 007 - Window Connector Design Error - Requires 2X duration to install	6-Aug-07	24	1670 - West44 Affix Window Wall Units Floors 23-44	ff	24	Finish delayed by 2X duration required

By Fred – some technical details

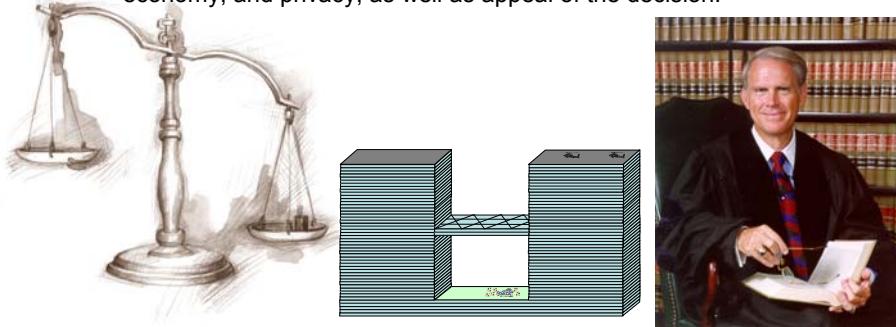
how these causative events have been connected to the activities of the logic network are detailed here

in this instance, both contractor and owner agree on these connections

in the real world of claims, this is often the most contentious element of the competing analyses of the experts for the contractor and owner

A better means of justice

- Hon. John M. Marshall
- MC² Legal, PLLC
 - Special Judge provided by contract in advance or by agreement of parties after suit filed; provides speed, economy, and privacy, as well as appeal of the decision.



By John – a better means of justice

May note advantages of arbitration of privacy

(Casino owners may not want to “wash laundry in public”)

But advantage of litigation that issues of law are appealable .. no runaway arbitrators

Battle of the Experts



By John –

Comments on today's mock trial –

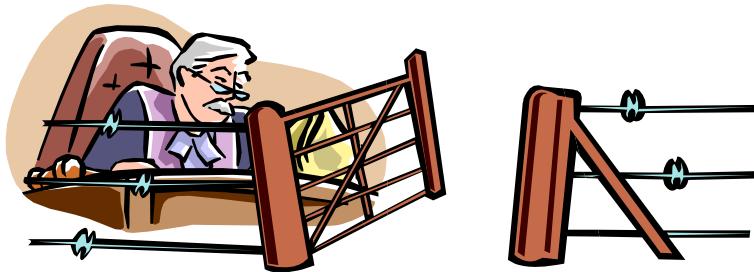
not a full trial – time would not allow full openings, acceptance by court of experts, and opening statements, direct/cross/redirect and closing by each side

several vignettes will be provided – enough to form an opinion and vote for the contractor or owner

John will then choose six members of the audience to reserved seats in the front row and swear in the jury

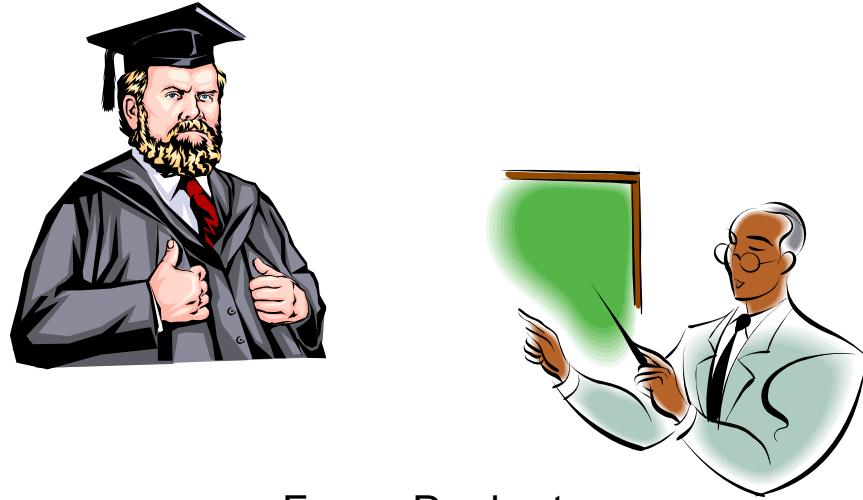
Voir Dire

Is the “Expert” competent to testify?



Text by Judge Marshall

Credentials v Teaching the Factfinder



Frye v Daubert

Any additional comments by Dan and Jeff

Voir Dire of Dr. Fredric L. Plotnick, Esq., P.E

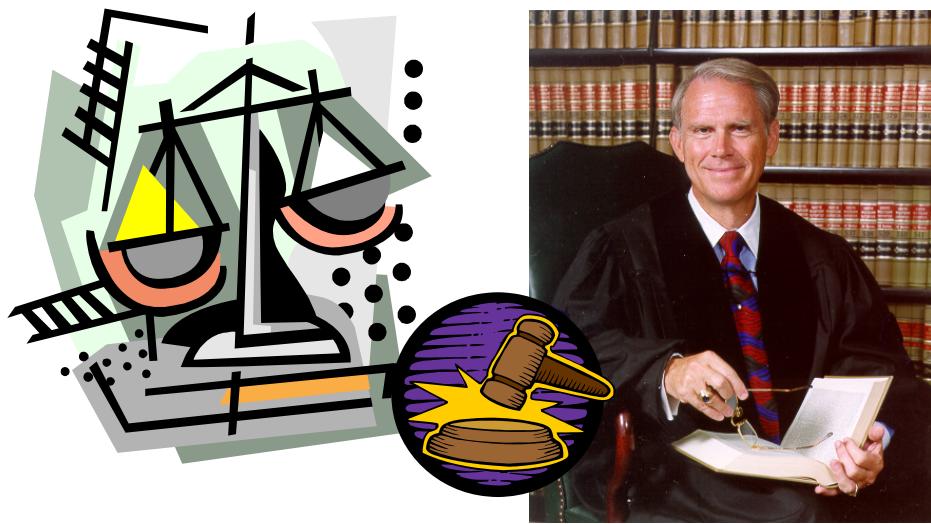


Jeff will swear in Fred – and continue voir dire to a point to include Fred's credentials and previous court appearances

At then end of the slide Jeff will ask the Court if this is enough –

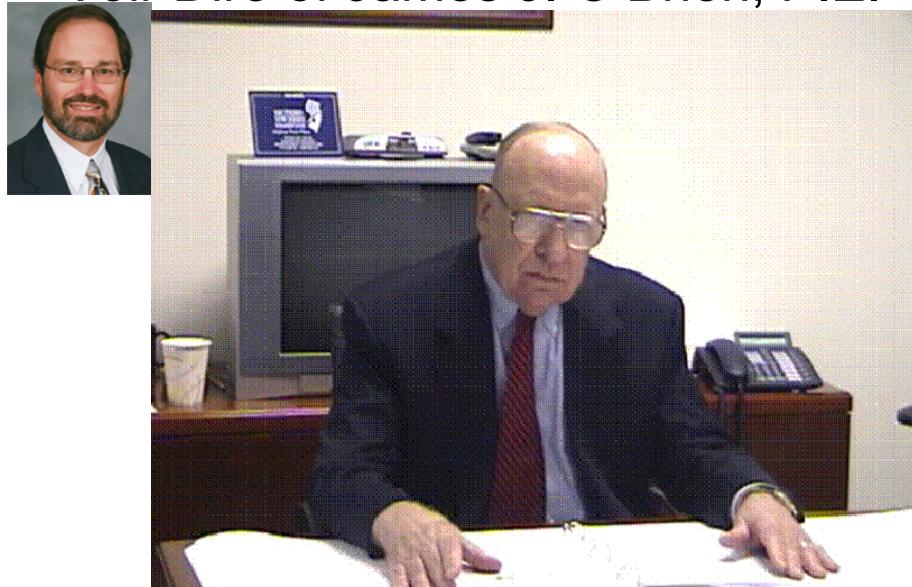
Dan may object “OK for CA but not for Federal Courts”

Decision Time



Text by Judge Marshall

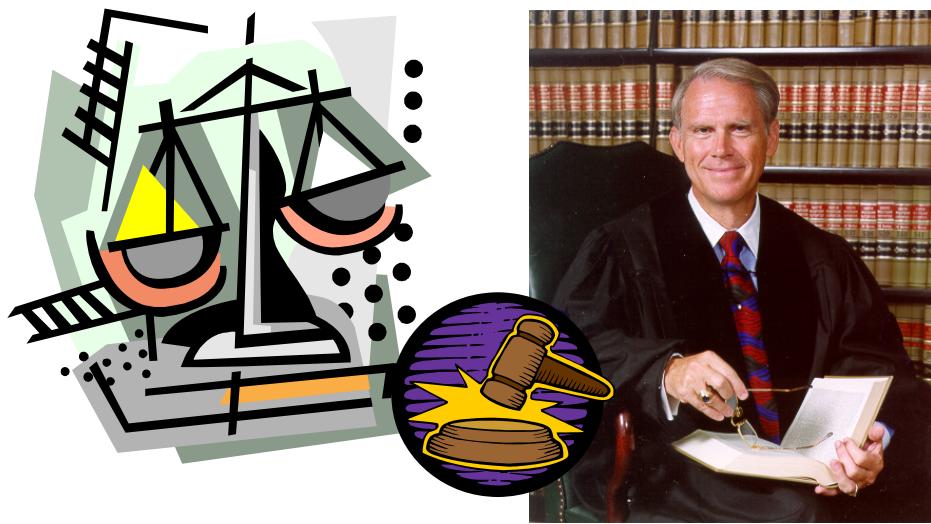
Voir Dire of James J. O'Brien, P.E.



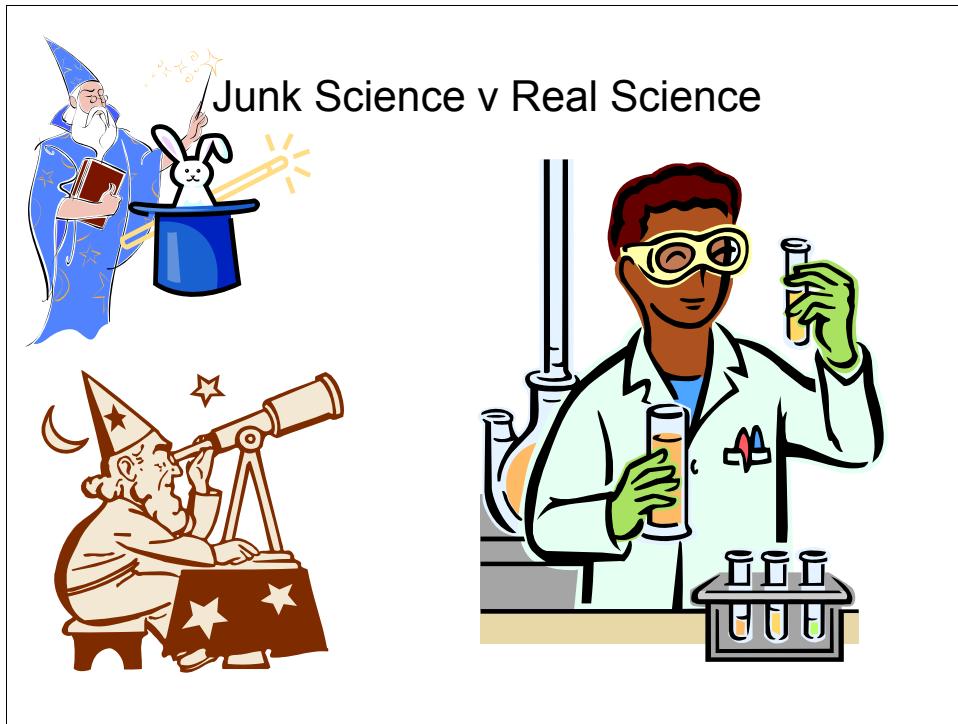
Next slide – Dan explains a proper Daubert voir dire covers “how to” and we play his voir dire of Jim

At the end of the slide Dan will ask the Court again if this is enough

Decision Time



Text by Judge Marshall

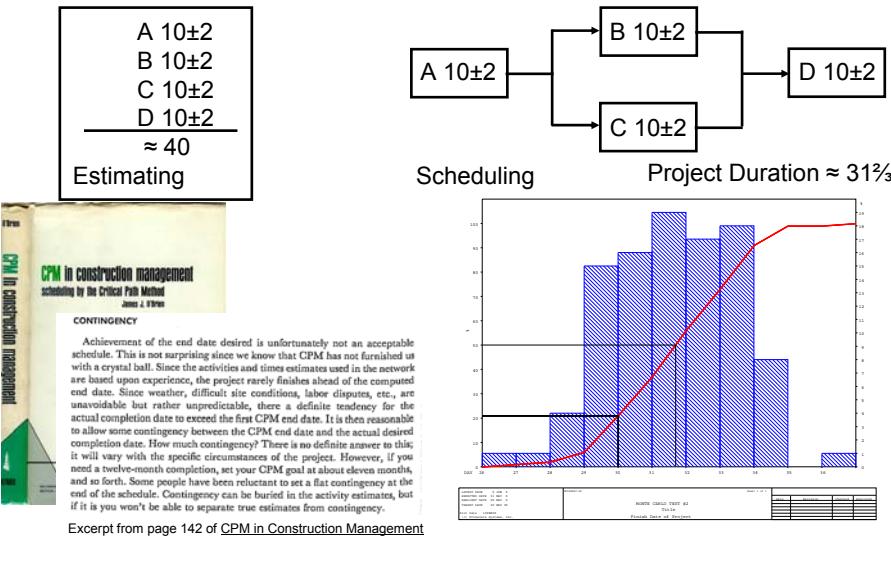


John will continue to discuss the problems of Junk Science and judicial remedies therefore

John will ask counsel if CPM, as a field of engineering, should pass a Daubert challenge – asking how accurate is the whole process, and if it has a scientifically established degree of error?

John will ask Fred, as an Expert for the Court, to discuss.

How accurate is the CPM calculation? Risk and Monte Carlo Simulation



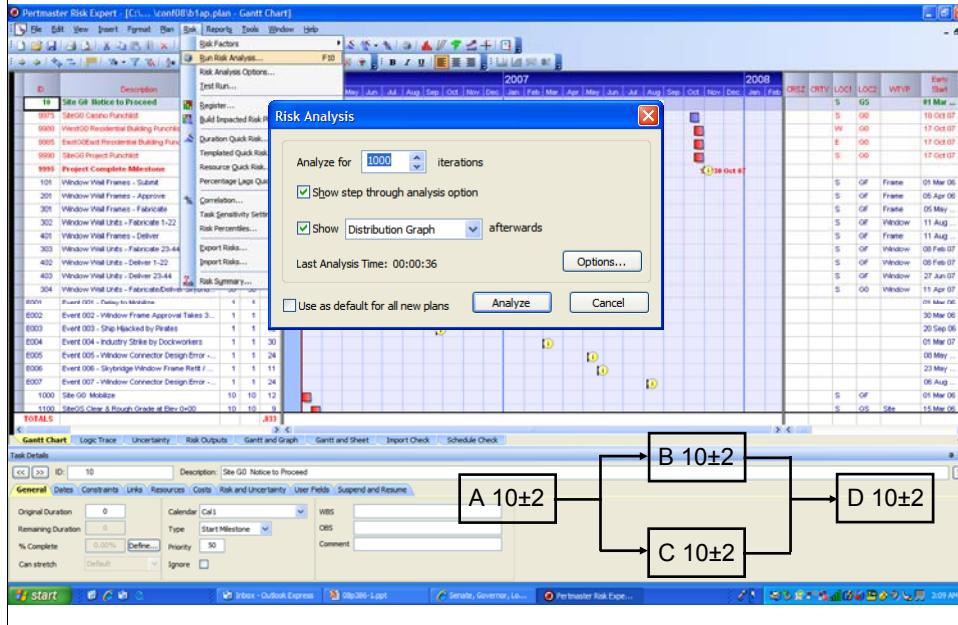
By Fred – theory here not testimony –

Risk is integral to CPM. The original texts on CPM emphasized that a contingency is required since the calculated CPM completion date will be earlier than the correct solution. Compare this to some recent misguided CPM specifications that require a contractor to use 100% of the contract time provided. Mathematically, this almost assures that the contractor will overrun the stipulated completion date and may legally not only relieve the contractor of that requirement, but entitle the contractor to damages for its late completion by interfering with contractor “means and methods.” .

The reason is merge bias. Look at the two calculations. If we add a list of costs, each which may randomly vary up or down, and run 1000 iterations of this exercise, the average total cost will still be \$40. But if we try the same exercise with a schedule where only two activities will merge, the average project duration will be 32 days rather the 30 days calculated by the CPM algorithm. In the case of the estimate, if one cost goes up and another goes down, they average out. In the case of a schedule, if one path is longer and the other shorter, the longer path only is used for the CPM calculation.

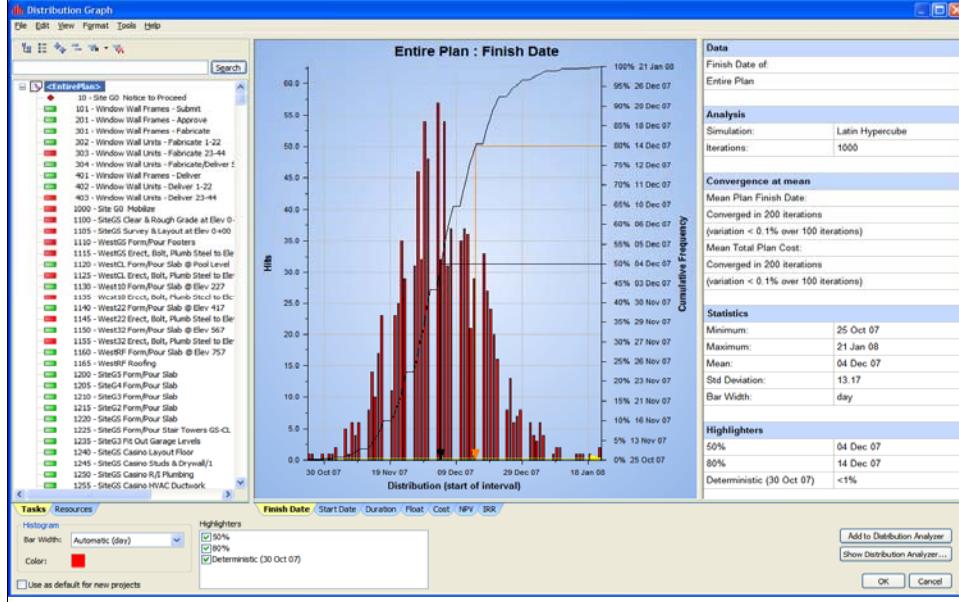
It is about time that the CPM calculation comes out to the same date the superintendent expected. And proper specifications should required that the schedule calculated by the CPM logic network have an 80% or 90% likelihood of timely completion.

How accurate is the CPM calculation?



For our The Bridge Hotels and Casino project, the deterministic completion date is 30OCT07 – which is using 100% of the contract time provided. According to Jim O'Brien, the contractor's schedule should have been planned to be at least one month early for a one year project, and so forth, with the exact required contingency to be determined by **experience**. But what would we find if we subject this CPM to the same analysis as the four activity network in our prior example? Let's try the industry standard of suggesting the accuracy of each activity duration is in an envelope of +20% but only -15%, then run 1000 iterations through a random generator.

How accurate is the CPM calculation?



The results are instructive. The contractor has less than 1% likelihood to complete on time. The most likely completion date (50% likelihood) is 04DEC08. Considering the financial risk of \$1,000,000 per day, the contractor possibly should have planned for (and owner specified the CPM provide) an enddate whch had an 80% chance of success. In this case, that would be 14DEC07.

Reversing the process, the contractor should have planned for completion by 15SEP07, or in O'Brien's terms, it should have 1½ months contingency for this 20 month project.

This CPM, as a schedule to meet a 01NOV07 deadline, was a project that was planned to fail.

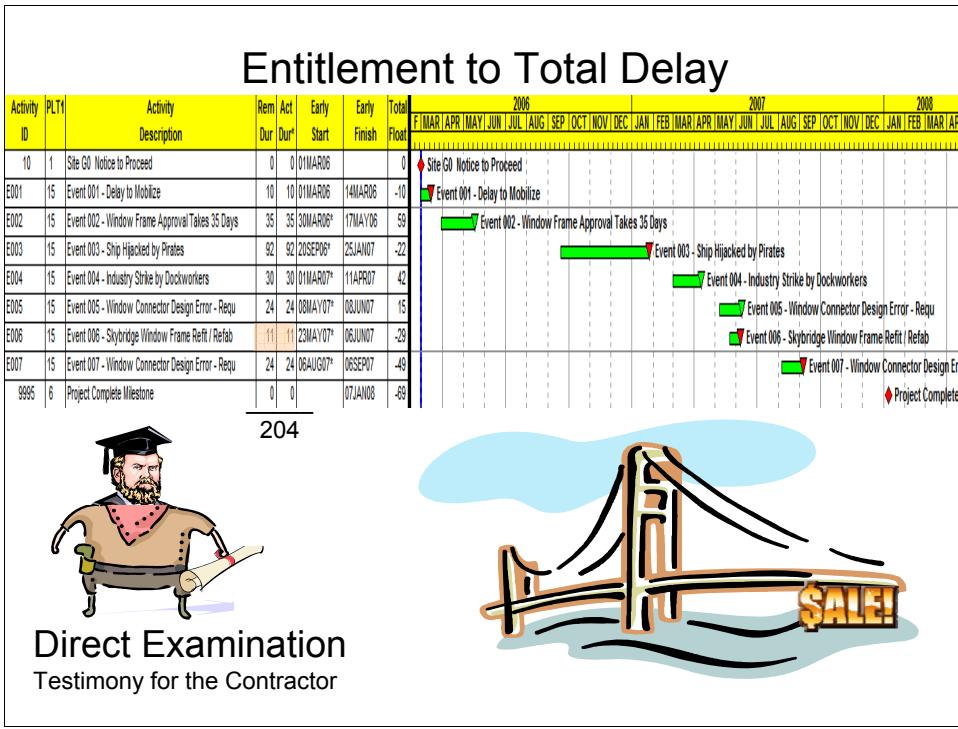


attacking the report



John will discuss how it is proper to attack the expert's report, rather than merely the expert, at a preliminary hearing

Dan and Jeff will add comments



Dan will lead Fred – the hired gun expert – through a simplistic delay claim presentation

attacking the report

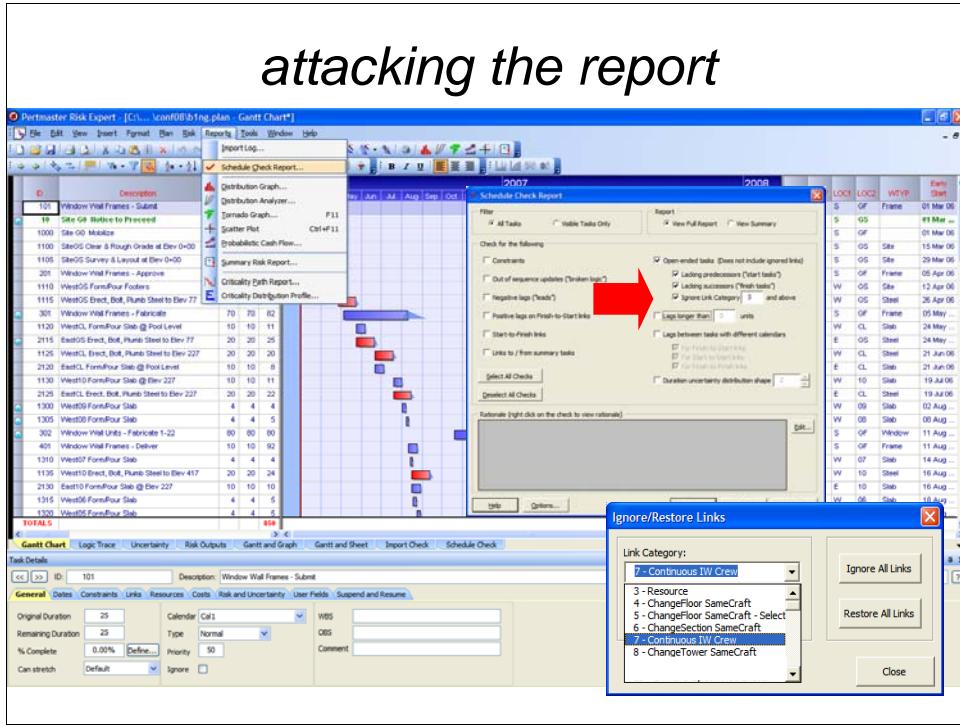
- set the predicate for a proper CPM
 - every activity (other than first) must have a predecessor
 - every activity (other than last) must have a successor
 - if these rules not followed the logic network will have open ends
 - what is wrong with open ends?
 - this required logic must be methodology (physical), not just resource
 - non-physical resource restraint example – crew from tower to tower
 - if non-physical resource restraints are removed – more open ends?
- does CPM used for this analysis meet these criteria?



Cross-Examination

Jeff will cross examine Fred by getting Fred to admit to a number of industry standard platitudes

And then ...



Attacking the report ...

By Jeff

"I want you to look at this report generated using the new RDM features (developed by Fred) that are incorporated into Primavera's Pertmaster (high-end) software

By reviewing your resource code assigned to each activity, and your location code noting East or West tower and floor, the restraints between activities have been coded as physical or various forms of resource based. So here Link Category #7 is assigned where Iron Worker crews move from one tower to another.

What do you suppose happens if these links are ignored while running the standard "open end" diagnostic"?

attacking the report

The screenshot shows the Pertmaster Report Viewer interface with the title "Pertmaster Schedule Check Report". The "Report Summary" section contains a table with various diagnostic metrics. A red arrow points to the "Open-ended tasks" row, which shows a count of 74.

Task view	All tasks
Open-ends	Not checked
Open-ended tasks (Does not include ignored links)	74
Out of sequence updates ("broken logic")	Not checked
Lags longer than 0 units	Not checked
Negative lags ("leads")	Not checked
Positive lags on Finish-to-Start links	Not checked
Start-to-Finish links	Not checked
Lags between tasks with different calendars	Not checked
Links to / from summary tasks	Not checked
Duration uncertainty distribution shape 2	Not checked
Total number of items found	74

For this network of 1169 activities and 2280 restraint links, the Pertmaster diagnostic has found 74 open ends – a few more than the 2 you claim to be in your analysis

Are these important?

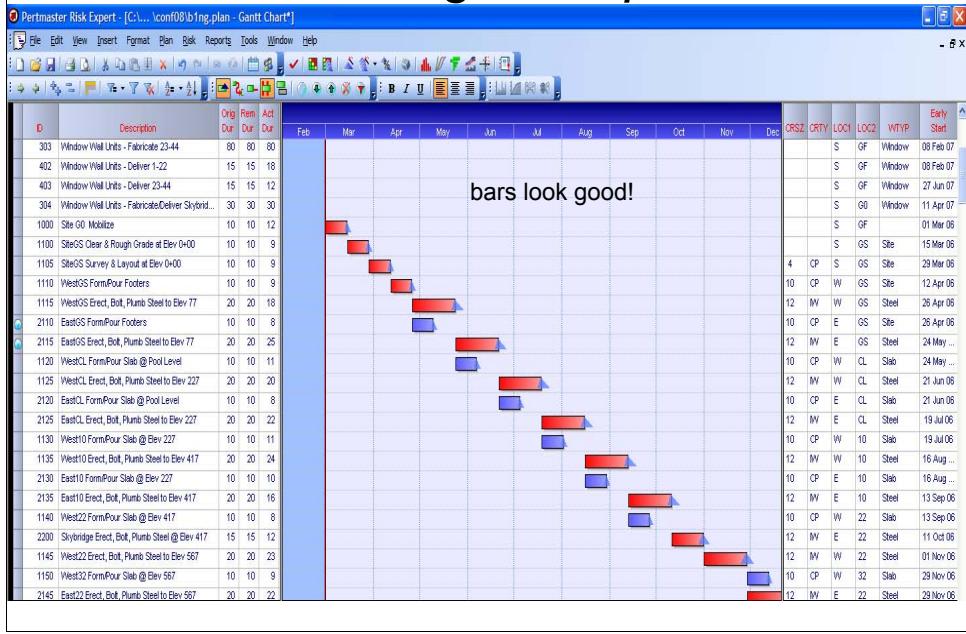
attacking the report

The screenshot shows a software window titled "Primavera Report Viewer". The menu bar includes "File", "Tools", "Help", and a search bar. Below the menu is a toolbar with icons for "New", "Open", "Save", "Print", "Check Report", and "Exit". A sub-menu "Open-ended tasks (Does not include ignored links)" is displayed, with options "Selected Predecessors", "Successors", and "All". A note states: "For a schedule risk analysis to be meaningful, it is important that tasks' dates are set by logic (e.g. Finish-to-Start links) rather than constraints. This is so that the risk analysis will recognize the knock-on effect of delays. An open-ended task is one that does not have at least one predecessor and one successor - it indicates a possible lack of logic. Consider closing open-ended tasks." It lists rules: "• If a task has no predecessor, try to find some other tasks which could potentially delay it. Leave it as open-ended if it is the project start milestone.", "• If a task has no successors, try to find some other tasks which it could potentially delay. Leave it as open-ended if it is a project finish or reporting milestone." The main table has columns: "Bookmark", "ID", "Description", "Type", "Remaining Duration", and "Detail". The table lists various tasks, many of which are marked as having no predecessors or successors. A red arrow points to the row for task #2115.

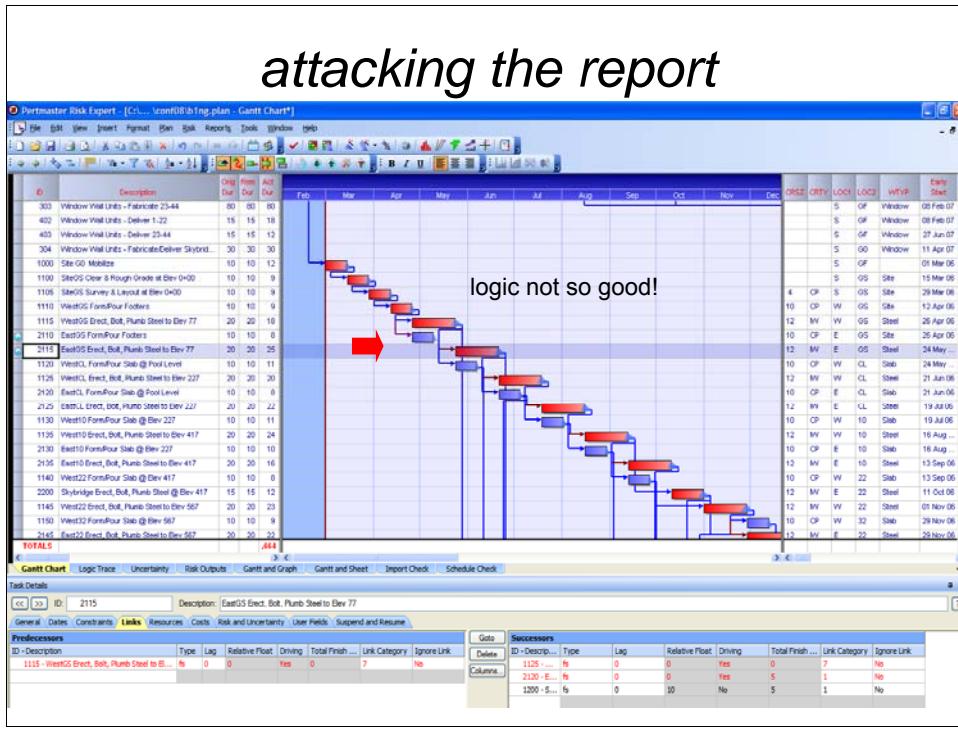
Bookmark	ID	Description	Type	Remaining Duration	Detail
	1300	West09 Form/Pour Slab	Normal	4	Finish has no successors
	1305	West08 Form/Pour Slab	Normal	4	Finish has no successors
	2400	East21 Form/Pour Slab	Normal	4	Start has no predecessors
	1302	West02 Affix Window Wall Frames Floors 1-3	Normal	6	Finish has no successors
	1450	West12 Affix Window Wall Frames Floors 10-12	Normal	5	Finish has no successors
	1470	West22 Affix Window Wall Units Floors 1-22	Normal	12	Start has no predecessors
	1302	West06 Affix Window Wall Frames Floors 4-6	Normal	6	Finish has no successors
	1364	West09 Affix Window Wall Frames Floors 7-9	Normal	6	Finish has no successors
	1364	West09 Affix Window Wall Frames Floors 7-9	Normal	6	Start has no predecessors
	1482	West15 Affix Window Wall Frames Floors 13-15	Normal	5	Finish has no successors
	1484	West10 Affix Window Wall Frames Floors 16-18	Normal	5	Finish has no successors
	2110	East08 Form/Pour Footer	Normal	10	No successors
	2110	East08 Form/Pour Footer	Normal	10	Start has no predecessors
	2115	East08 Erect, Bolt, Plumb Steel to Elev 77	Normal	20	Start has no predecessors
	2360	East03 Affix Window Wall Frames Floors 1-3	Normal	6	Finish has no successors
	2362	East06 Affix Window Wall Frames Floors 4-6	Normal	6	Finish has no successors
	2364	East09 Affix Window Wall Frames Floors 7-9	Normal	6	Finish has no successors
	2410	East19 Form/Pour Slab	Normal	4	Start has no predecessors
	2415	East18 Form/Pour Slab	Normal	4	Start has no predecessors
	2420	East17 Form/Pour Slab	Normal	4	Start has no predecessors
	2425	East16 Form/Pour Slab	Normal	4	Start has no predecessors
	2430	East15 Form/Pour Slab	Normal	4	Start has no predecessors
	2435	East14 Form/Pour Slab	Normal	4	Start has no predecessors
	2440	East13 Form/Pour Slab	Normal	4	Start has no predecessors
	2445	East12 Form/Pour Slab	Normal	4	Start has no predecessors

Activity 2115 is claimed to have no predecessors if resource links are ignored
... let's see why ... let's click #2115 ...

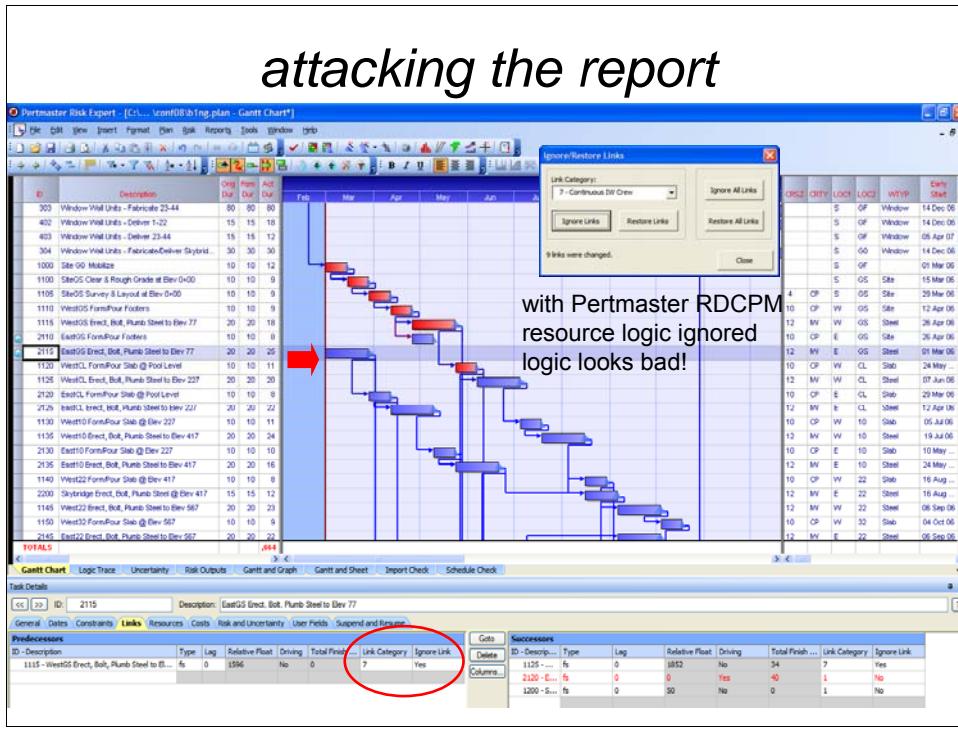
attacking the report



Well the bars look good on your bar-chart ... the iron work crew appears to take a little longer than the elevated concrete slab crew, but this looks like a good schedule



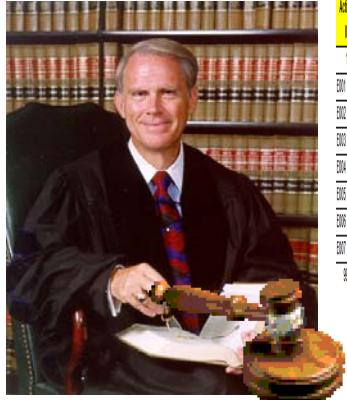
But if we show the links we see a different story. Activity #2115 is shown to have only a resource based link from #1115 and is not properly connected from #2110.



So if it does not matter if #2115 is connected to from #2110 what would the schedule show if only the "Iron Worker between Towers" restraints were ignored?

And the contract does indicate that the contractor should be prepared to work both towers at the same time?

Decision Time



Activity ID	Activity Description	Pre-req	2018			2019			2020		
			Start Date	End Date	Duration	Start Date	End Date	Duration	Start Date	End Date	Duration
101	Step 01: Notice to Proceed		1/1/2018	1/15/2018	14 days	1/16/2019	1/31/2019	15 days	2/1/2020	2/15/2020	14 days
E01	Event 01 - Delay to Mobilize	101	10/1/2018	10/15/2018	14 days	10/16/2019	10/31/2019	15 days	10/1/2020	10/15/2020	14 days
E02	Event 02 - Window Frame Approval Takes 25 Days	35	35/10/2018	35/11/2018	30 days	35/10/2019	35/11/2019	30 days	35/10/2020	35/11/2020	30 days
E03	Event 03 - Ship hijacked by Pirates	32	32/10/2018	32/12/2018	54 days	32/10/2019	32/12/2019	54 days	32/10/2020	32/12/2020	54 days
E04	Event 04 - Industry Strike by Dockworkers	31	31/10/2018	31/11/2018	31 days	31/10/2019	31/11/2019	31 days	31/10/2020	31/11/2020	31 days
E05	Event 05 - Window Connector Design Error - Req.	24	24/10/2018	24/11/2018	30 days	24/10/2019	24/11/2019	30 days	24/10/2020	24/11/2020	30 days
E06	Event 06 - Sloghane Window Frame Refit - Rebal	11	11/10/2018	11/16/2018	6 days	11/17/2019	11/23/2019	6 days	11/17/2020	11/23/2020	6 days
E07	Event 07 - Window Connector Design Error - Req.	24	24/10/2018	24/11/2018	30 days	24/10/2019	24/11/2019	30 days	24/10/2020	24/11/2020	30 days
BB05	Project Complete Maritime		1	1/1/2019	365 days						

204

By John – decide on whether to accept Fred's simplistic schedule analysis



BREAK

But don't leave
if you want to be drafted for
The Jury



Direct Examination

Testimony for the Contractor



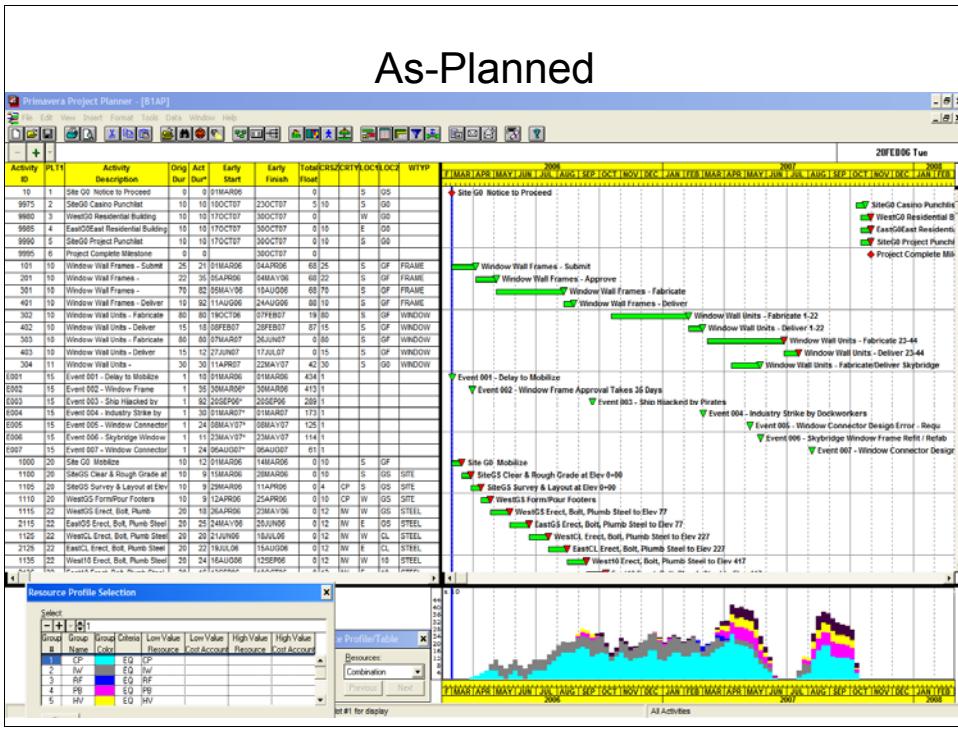
Probable time for session break – Regrouping for mock trial – re-introduction by John

Purpose of Direct Examination

- Humanize witness -- stress credibility
- Weave expert's report into the "storyline"
- Simplify presentation of
 - assumptions
 - findings
 - analysis
 - opinions
- Defuse weak points

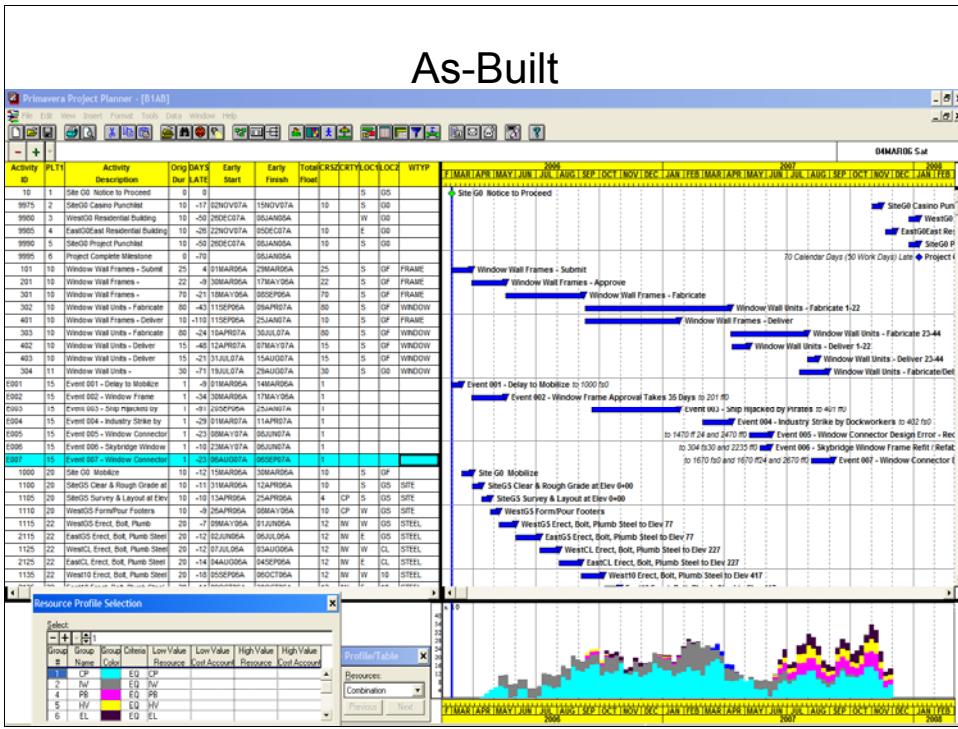


Text by Dan on how an attorney should conduct direct examination



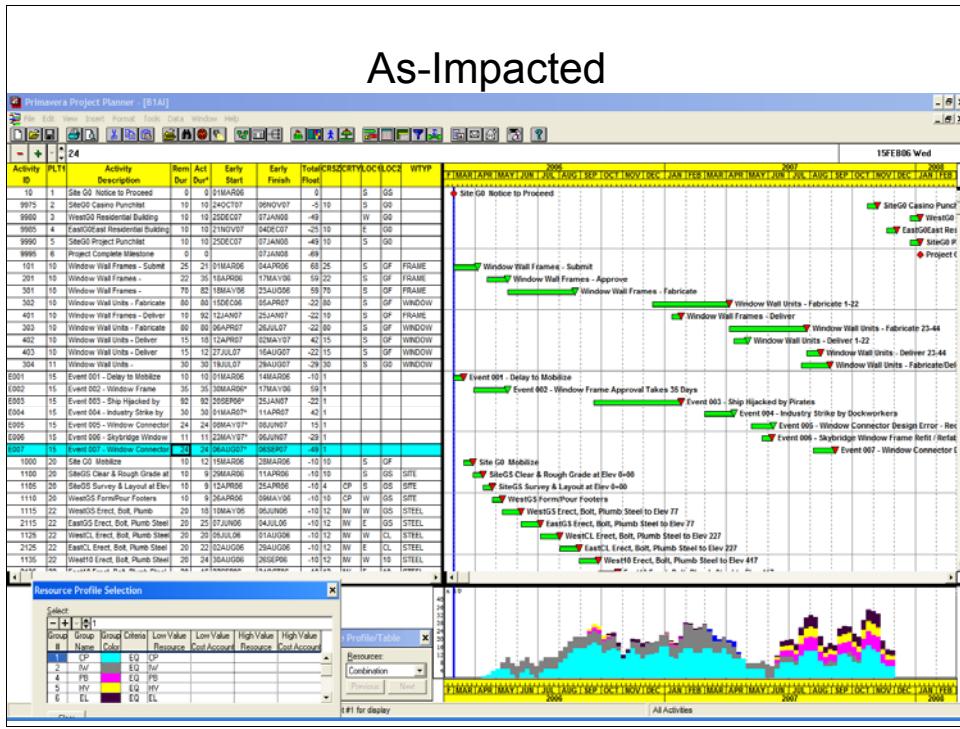
Dan leads Fred (as Contractor' Expert this time) through presentation of claim

Fred - Hailey&Burton Cartwright (the contractor) did one bang-up job of planning this project. The As-Plan schedule clearly shows how the project kicks off right from Day One mobilize and moves through erecting the steel. The level of staffing by Cartwright is significant, but workable.



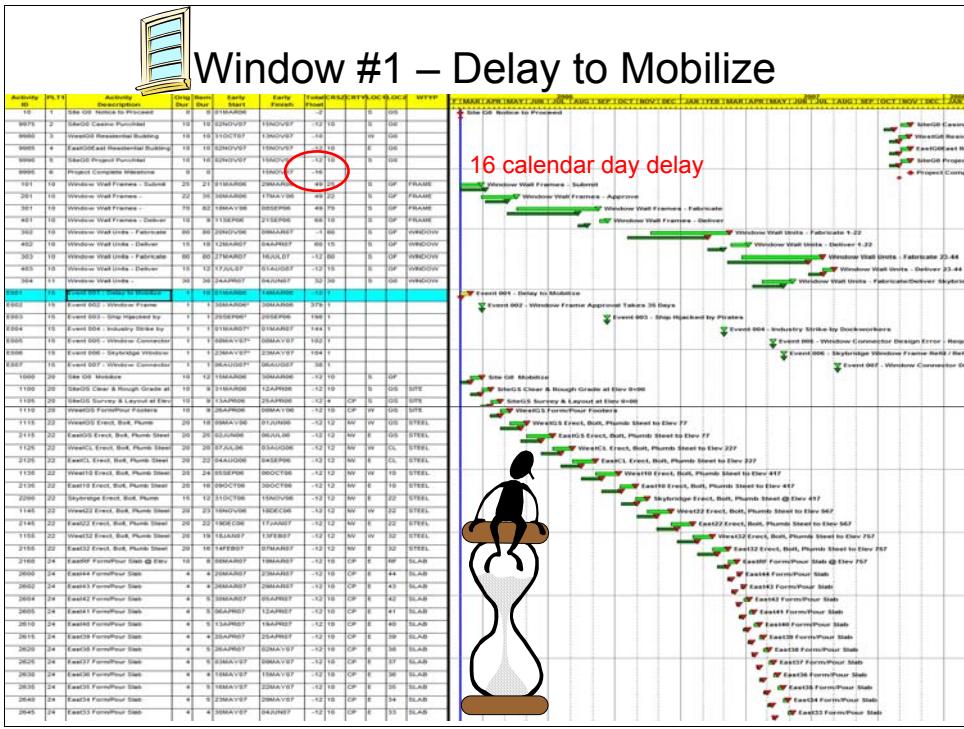
Fred - the As-Built schedule shows a project that was seriously delayed by the SEVEN causative events added. These SEVEN causative events clearly caused the delay to the project and should relieve the contractor of L/D's

How do we know it is these causative events that created the delay? As provided in Jim O'Brien's testimony, we will load these to the As-Plan and see the result - leaving it to the Jury to determine if the As-Impacted matches the As-Built

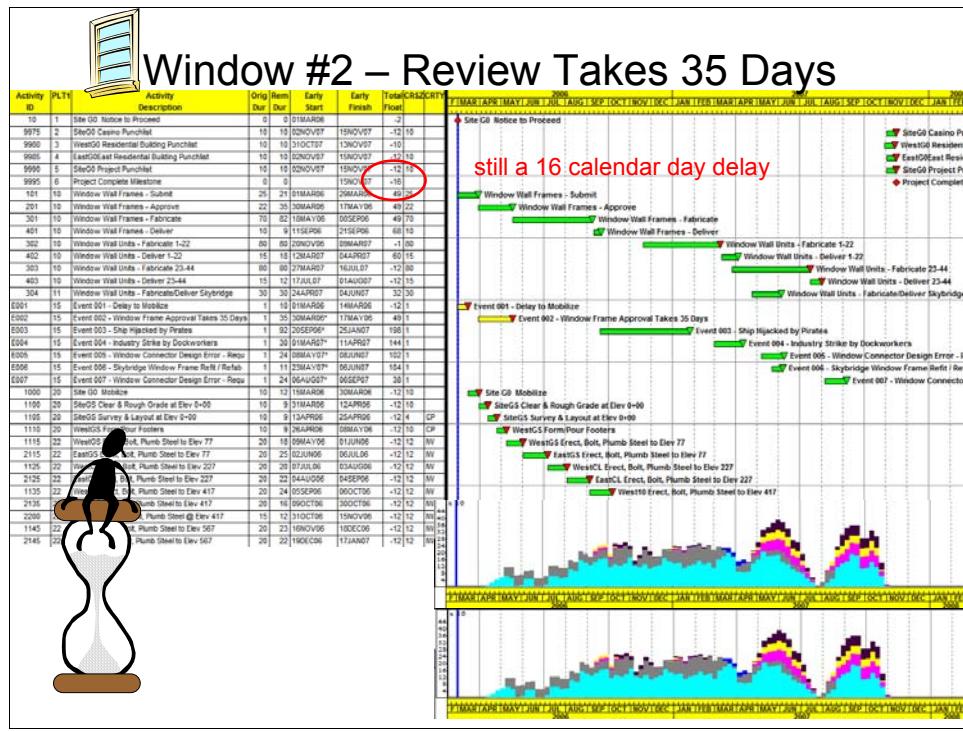


and here is the As-Impacted, showing the theoretical impact of the SEVEN causative events to this project

it should be conclusive to the issue of relief from L/D's that this As-Impacted schedule matches the As-Built, but perhaps we should look more closely and compare this result to that which may be shown by adding each of the SEVEN causative events at a time - the Windows approach

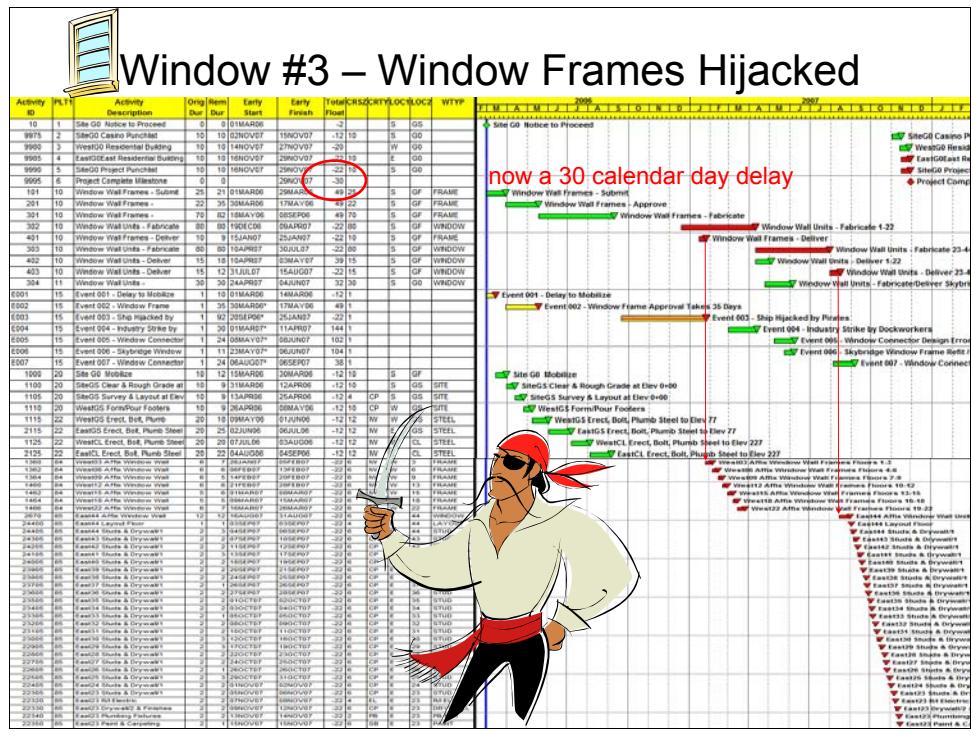


window #1 shows that the 10 work day delay to provision of the site by the owner to the contractor had a 16 calendar day impact to the project

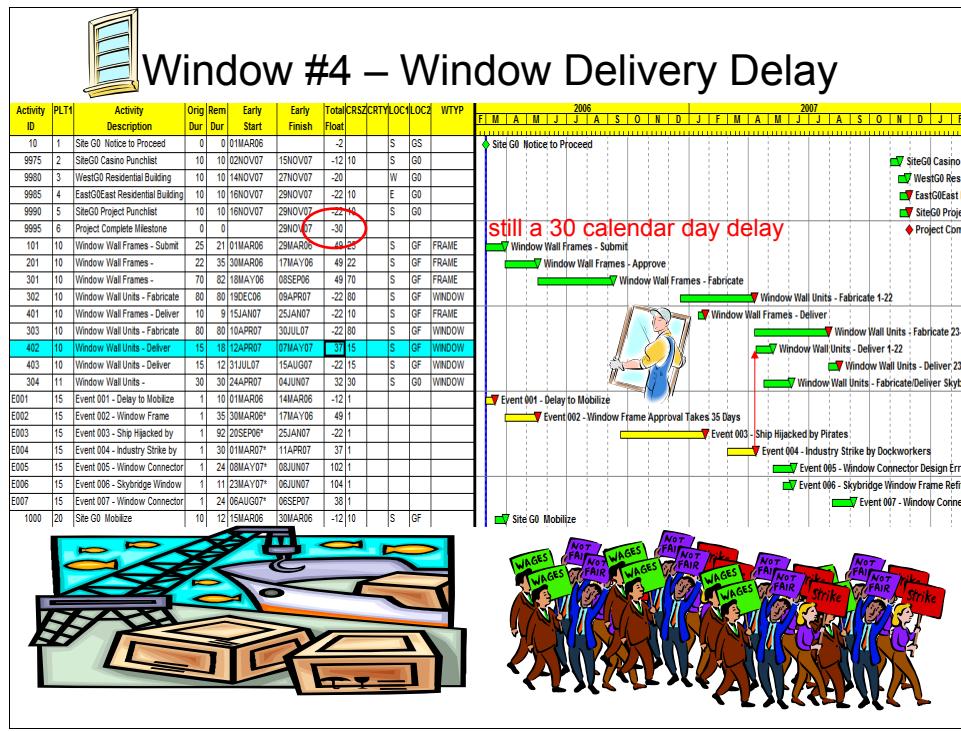


in window #2 we factor in the 35 days it took the owner to review the contractor's window frame shop drawings, but conclude that while these may have caused a disruption and additional cost to the contractor, they did not add any delay to the project

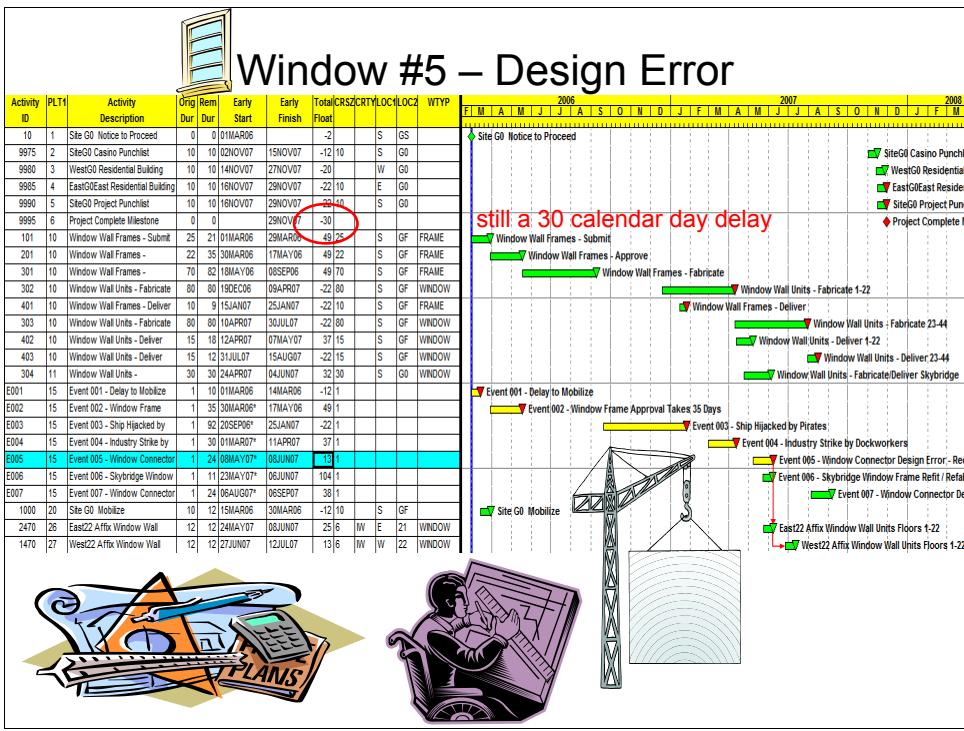
this is because delivery of the window frames had float



in Window #3 we see the unfortunate event where the window frames, even though fabricated early (and despite the delays caused by the owner's dalliance with shop drawing review,) were hijacked by pirates while enroute this instance of Force Majuere caused an additional delay to the project of 30 days. The contractor does not ask for compensation for this delay - since it is Force Majuere - but does ask for the time lost.

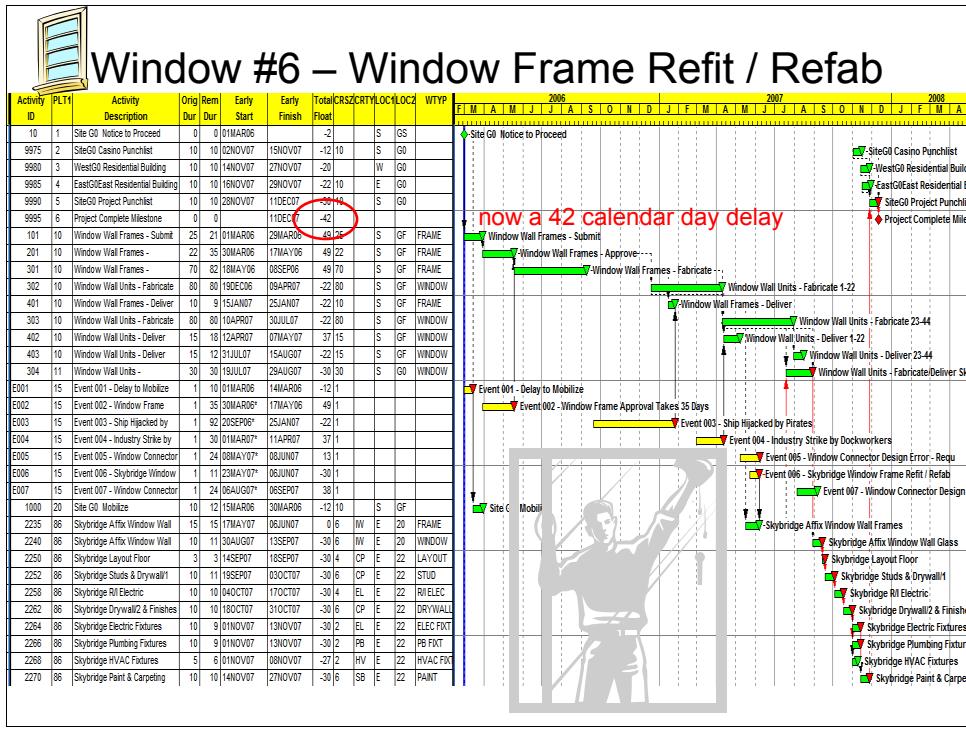


in Window #4 we see that the impact of the longshoreman strike - also an instance of Force Majeure - had no additional impact on the project



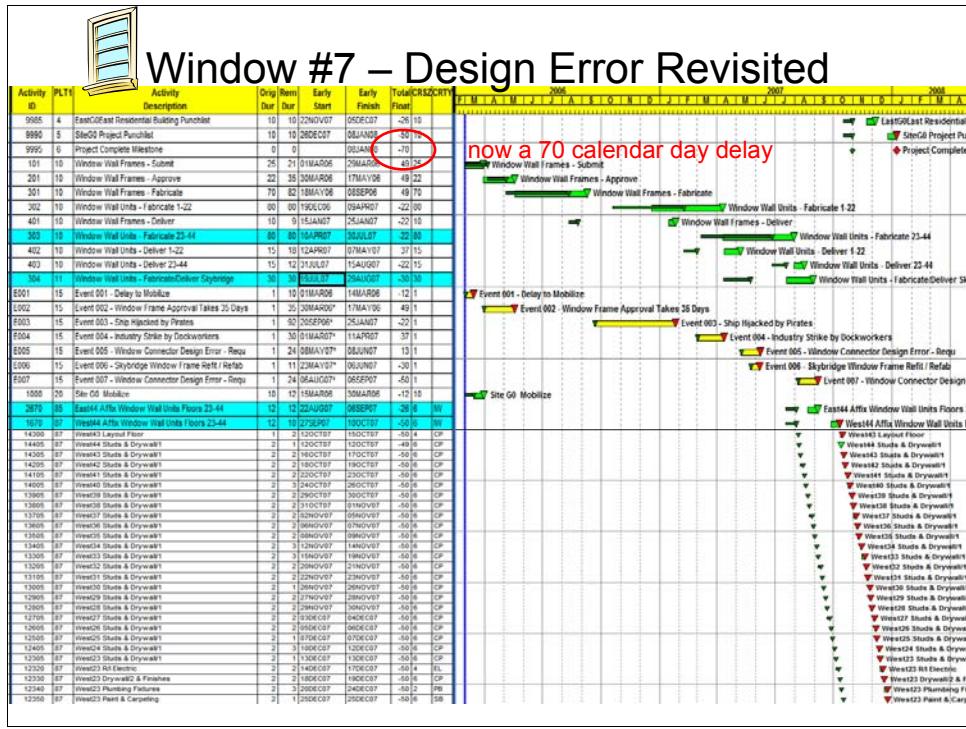
in Window #5 we note the discovery of a serious design error by the owner - but note that at this point in time that it had no immediate impact to the project.

And therefore, although Cartwright requested additional funds to accelerate, as may be found in the weekly project meeting minutes, the owner refused.



in Window #6 we see the impact of yet another design error involving how the window frames on the skybridge are not proper - and which added 11 calendar days to the project

while the owner's expert (yesterday) tried to claim this was an installation error and not a design error - and that their inspectors told our craftsmen they were improperly installing the frames - they have not one piece of paper to support this canard. they claim the inspectors have moved away and have pestered our union hall to locate the craftsmen who they claim were notified - which is irrelevant since if they truly had nay concern, such notice should have been in writing



in Window #7 we see the impact of the design error noted in Window #5 and the ill advised refusal of the owner to pay the Cartwrights to accelerate

this causative event thus adds an additional 30 calendar days of delay to the project, now totalling 70 calendar days

the project was 70 days late, the owner demands 70 days of L/D's, and yet this analysis has shown that the contractor is entitled to an extension of time for the entire 70 days.

Cross-Examination



Jeff will cross examine Fred ----

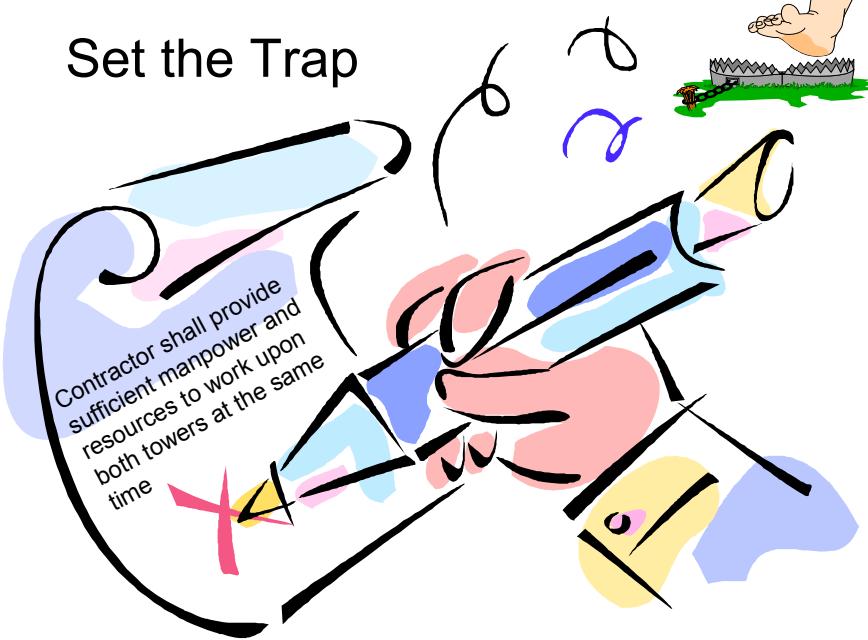
Purpose of Cross-Examination



- Raise “doubts” as to Expert’s Opinion
 - Qualifications of the Expert
 - For the opinion to be rendered
 - Any particular “bias”
 - Knowledge (lack thereof) of “true” underlying facts
 - Methodology and assumptions employed to reach conclusions and opinions
- Advance your theory of the case
 - “If the jury determines ..., you would agree that ...”

Text by Jeff on how an attorney should conduct cross examination

Set the Trap



Jeff will ask if contract requires ...

Spring the Trap



Activity ID	Activity Description	Orig Dur	Act Dur*	Early Start	Early Finish						
						FEB	MAR	APR	MAY	JUN	JUL
1000	Site GO Mobilize	10	12	01MAR06	14MAR06	13, 20, 27, 6	13, 20, 27, 3	, 10, 17, 24, 1	, 8, 15, 22, 29, 5	, 12, 19, 26, 3	
1100	SiteGS Clear & Rough Grade at Elev 0+00	10	9	15MAR06	28MAR06						
1105	SiteGS Survey & Layout at Elev 0+00	10	9	29MAR06	11APR06						
1110	WestGS Form/Pour Footers	10	9	12APR06	25APR06						
2110	EastGS Form/Pour Footers	10	8	26APR06	09MAY06						



Jeff will ask how this excerpt from the project may be defended in light of the quoted contract language

P6 Over the Web

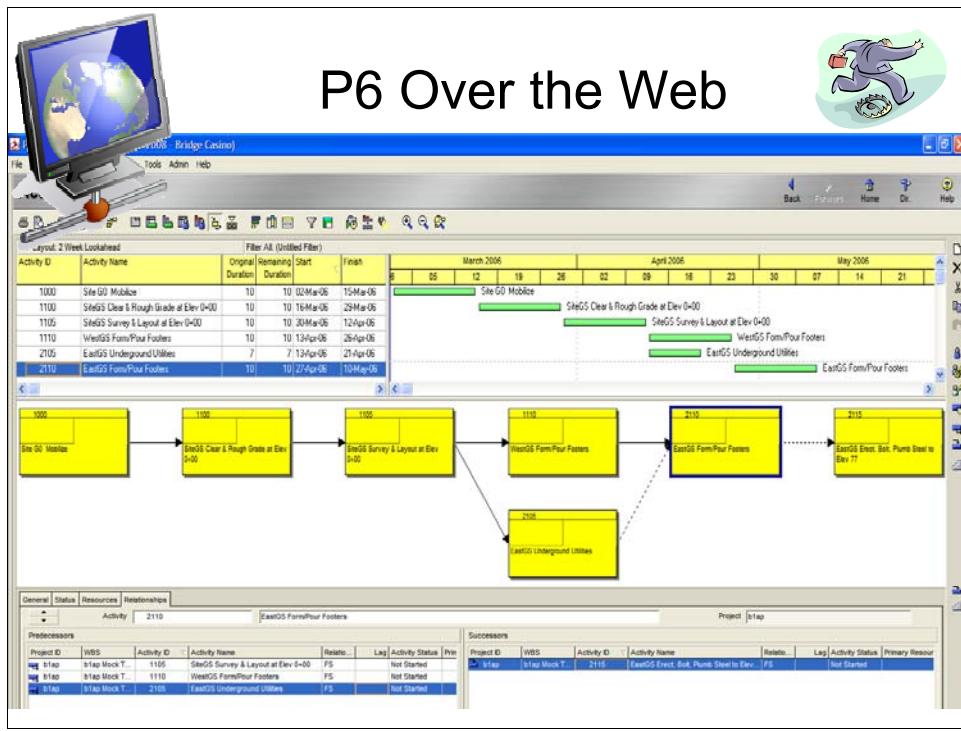


Fred will note lack of knowledge of every one of 1176 activities and 2263 restraints ... and lack of access to project files in the courtroom
but will note that new feature of P6 software allows access from any computer on the planet, via the web, of project files ... ask judge for permission to look up excerpt provided by Jeff

P6 Over the Web



We fake the use of the internet



Fred will note that review of file indicates another activity, not in Jeff excerpt, for U/G utilities on East side of building site, which justifies use of the CPM for this analysis

Dan may have some comments about Jeff's antic

So may John – along with advise to audience if called as an expert

Re-Direct Examination



Text by Dan McMillan .. Next slide

Re-Direct Examination

- Re-Direct is to let the attorney be the advocate
 - And to let you be the EXPERT
- *If* your client's attorney needs to "save your reputation"
 - solely to assist your joint client
- A good attorney will know how you could respond
- A good attorney will know when the factfinder also knows
 - and that's a very good time to stop

Text by Dan on how/why/when an attorney should conduct re-direct examination

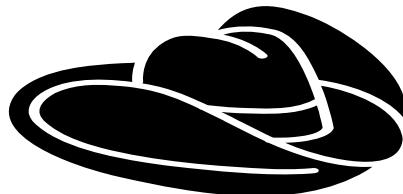
Changing Hats



Expert for the Contractor



Expert for the Owner



John will explain that Jim could not make it to Las Vegas, and that Fred is switching hats and will now be the expert for the owner

Direct Examination

Testimony for the Owner

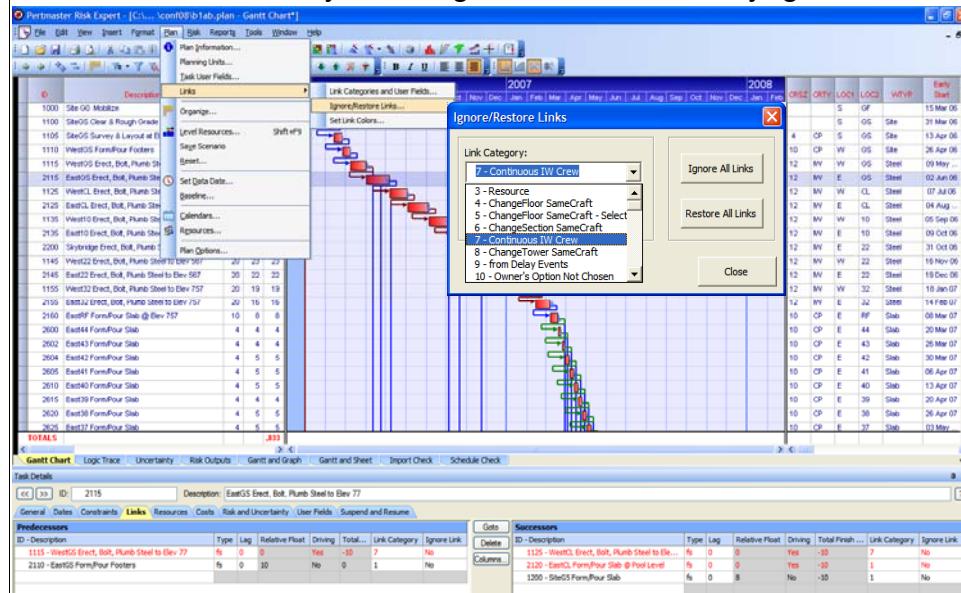


Jeff will make a brief opening statement, then

Jeff will lead Fred through direct – this time as expert for the owner

Pertmaster

New RDCPM™ Ability to Categorize and Selectively Ignore Links



Jeff leads Fred

"Did you review the CPM schedules used by the contractor's expert?

"Any opinion?

"Upon what analysis did you base your opinion? Please explain

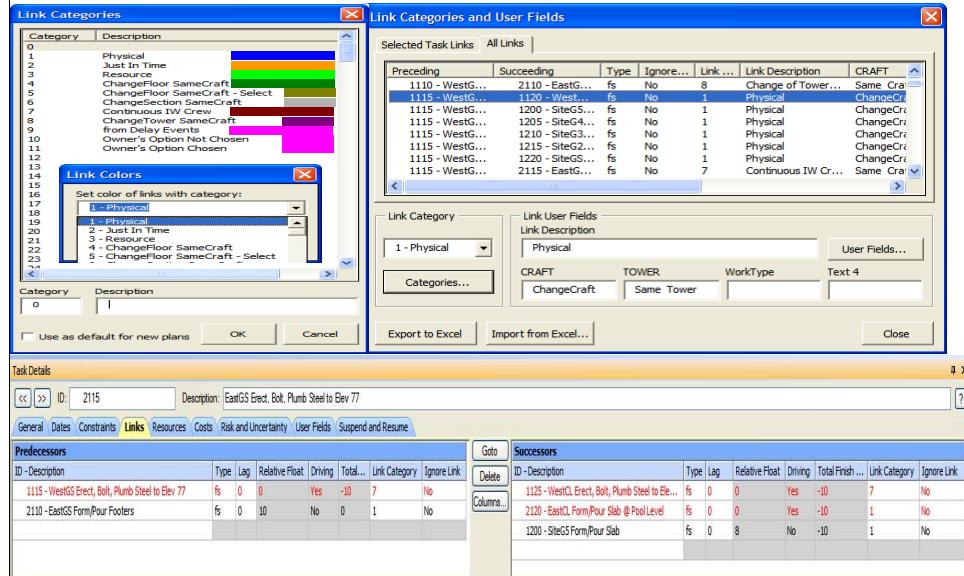
Fred will explain he used Primavera's Pertmaster Risk Analysis software to analyze the contractor's schedule and Window's analysis.

By comparison of the user defined activity code for location and resource code, Fred has coded all restraint links between activities which have the same IW craft but are performed in different towers. The link color for these restraints has been set to brown as shown in the screen shot.

Pertmaster with RDCPM has the ability to temporarily ignore all these links to see what change this may have to the schedule.

Pertmaster

New RDCPM™ Ability to Categorize and Selectively Ignore Links



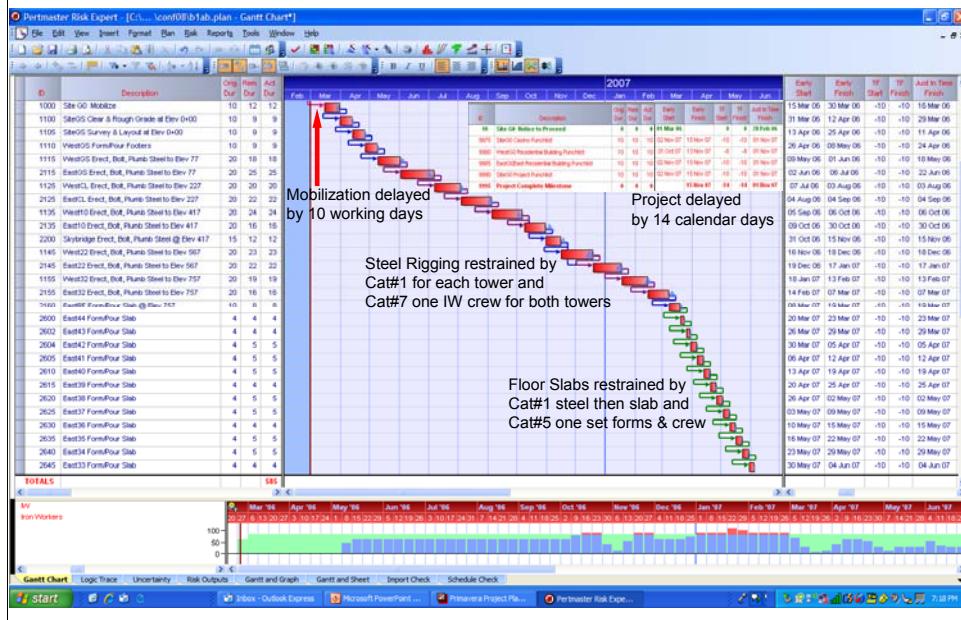
Similarly, this feature of Pertmaster with RDCPM has been used to code links as Physical, Just-in-Time support, or various categories of resource restraints.

Where the same craft or resource moves from floor to floor in a tower, these are coded as #4 and the link color is dark green. Where movement is from one section of the tower to another (below the skybridge to above the skybridge) these are coded grey. Where the IW crew moves between towers, the color is brown; other crafts moving between towers are coded purple.

Restraint links from the Delay Events provided in the Contractor's analysis are coded pink. Code Pink is also reserved for several other options not used in this project.

The jury may also note that each restraint link between activities has been coded as to why it is there, noting a Link Description, Same or Change of Craft, Tower and Worktype. This information may be exported to an Excel spreadsheet for review, and changes may be imported back to Pertmaster.

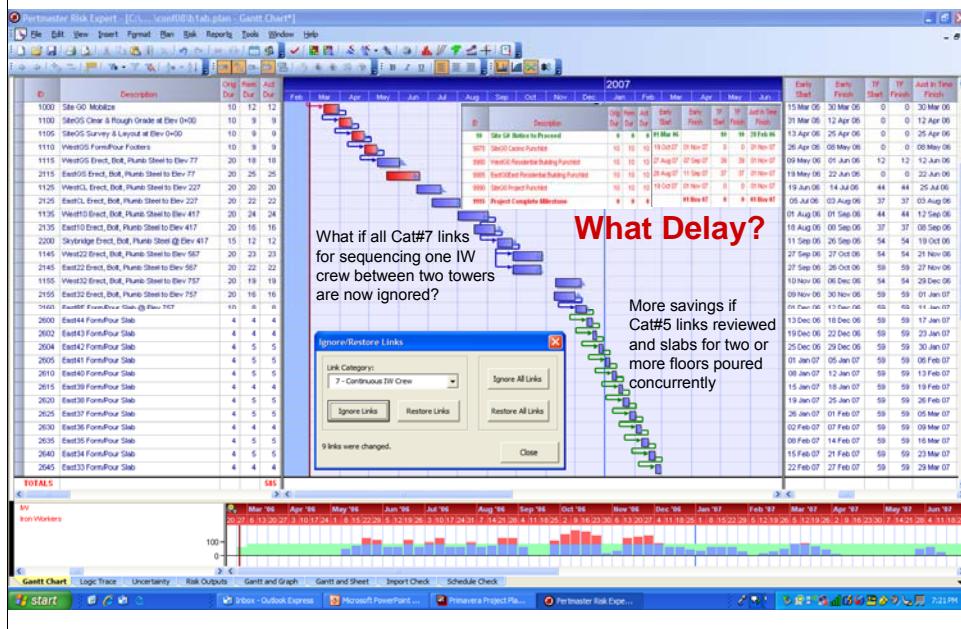
Window #1 “what if?”



Jeff - Reviewing Contractor's Window #1 claiming 10 day delay to project caused by owner .. Any rebuttal?

Fred - Owner was responsible for lack of access to project for 10 work days .. However, contractor could have mitigated by honoring contract obligation to work both towers at same time.

Window #1 “what if?”



Fred – if contractor had worked both towers at same time for just the initial steel rigging, there would be no delay .. and in fact hotel towers would be complete SEVEN WEEKS EARLY .. even with the owner's late provision of access to the site – pure and simple, the real critical path – recognized by both parties, was design and fabrication of the window skin system

Explicit Contract Language

“Contractor shall provide sufficient manpower and resources to work upon the casino and both hotel towers at the same time.”

“In the event that **the contractor believes** that actions or inactions of the owner have caused a delay to the project, **the contractor shall notify** the owner and **shall review and modify its plan of execution** to mitigate such delay.”

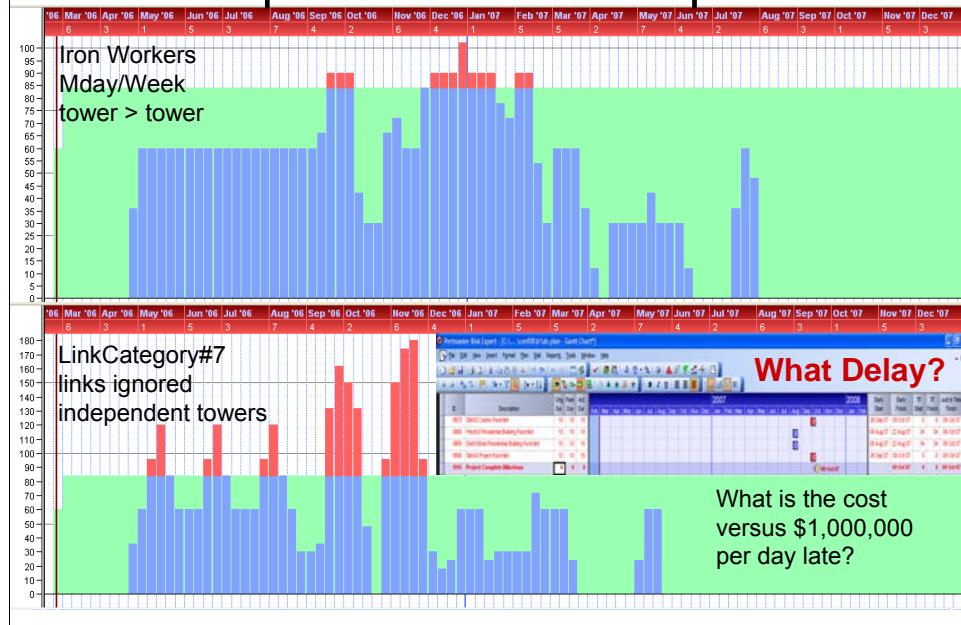
“In such event, the contractor **shall immediately provide** the owner with:

- 1) an **estimate** of the length of anticipated delay without effectuating such recovery plan, and
- 2) an **estimate of the cost of** effectuating such **recovery plan.**”

Fred – even if we assume the contractor had the right to work one tower at a time, once the owner was late with access, the contractor had a duty to work both towers and charge the owner for mitigating the problem

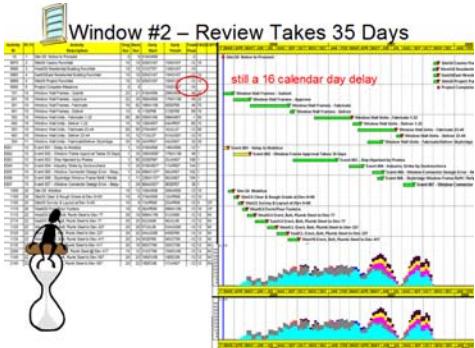
Jeff - ask if the notice provisions are so owner has opportunity to decide to pay for mitigation – so no financial reason for contractor to not mitigate

Compare Contractor Options



Fred – assuming the contractor need to accelerate the full 47 days, rather than only 10 days, and so had bring in additional crews, what is the cost? .. a lot less than the \$1mm per day the contractor knew late completion would cost the owner

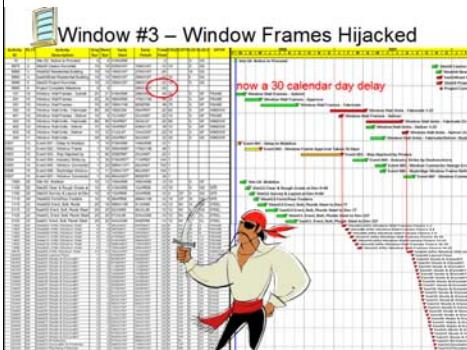
Window #2 - no harm



specification provides Owner
22 days for review –
so complaint is for
only 13 and not full 35 days
but float > 13 ... so no harm

Jeff .. then Fred .. note initial review period was 22 days .. thus claim cannot be for full 35 days used but only for 13 days .. on an activity that had much float

Window #3 – Who is responsible?



"In the event that the contractor believes that actions or inactions of the owner have caused a delay to the project, the contractor shall notify the owner and shall review and modify its plan of execution to mitigate such delay."

- 80 days float when hijacked
- factory needs 50 to re-fab
- contractor has \$1m deductible
- contractor chooses to negotiate past 30 days,
- then past 80 days,
- finally getting release & delivery at day 92
- causing a 12 day additional delay from -10 to -22 work days late or from -16 to -30 calendar days late
- cost to Casino is addl \$14,000,000
- **this is NOT force majeure**

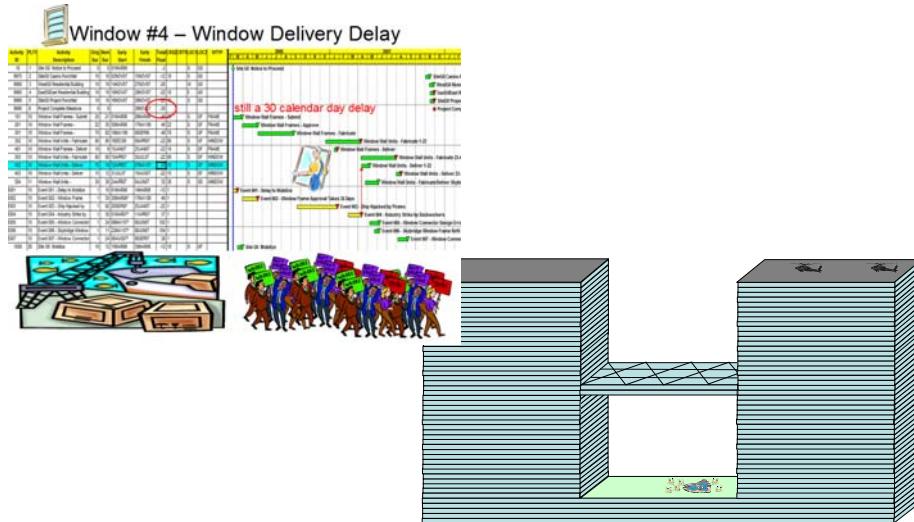
Jeff .. then Fred .. NOT force majeure ..

68 days float in Window #2, plus 12 days for then existing delay = 80 days effective float

COMMENT – even if an activity has a lot of float – time passes by very quickly – need to watch as activity becomes critical

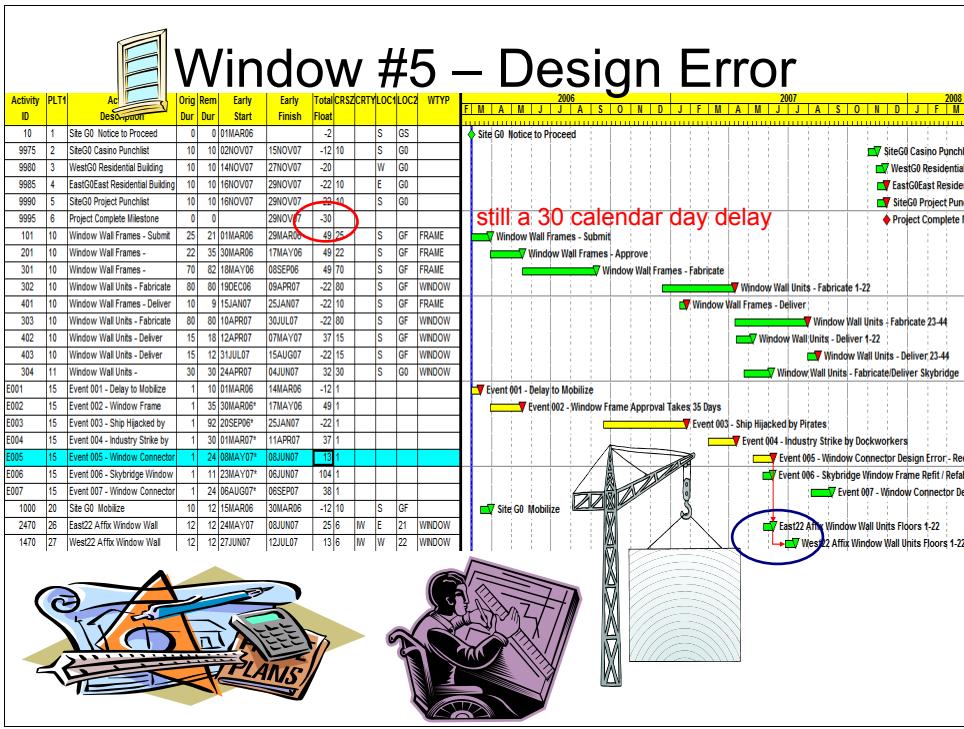


Window #4 – No harm



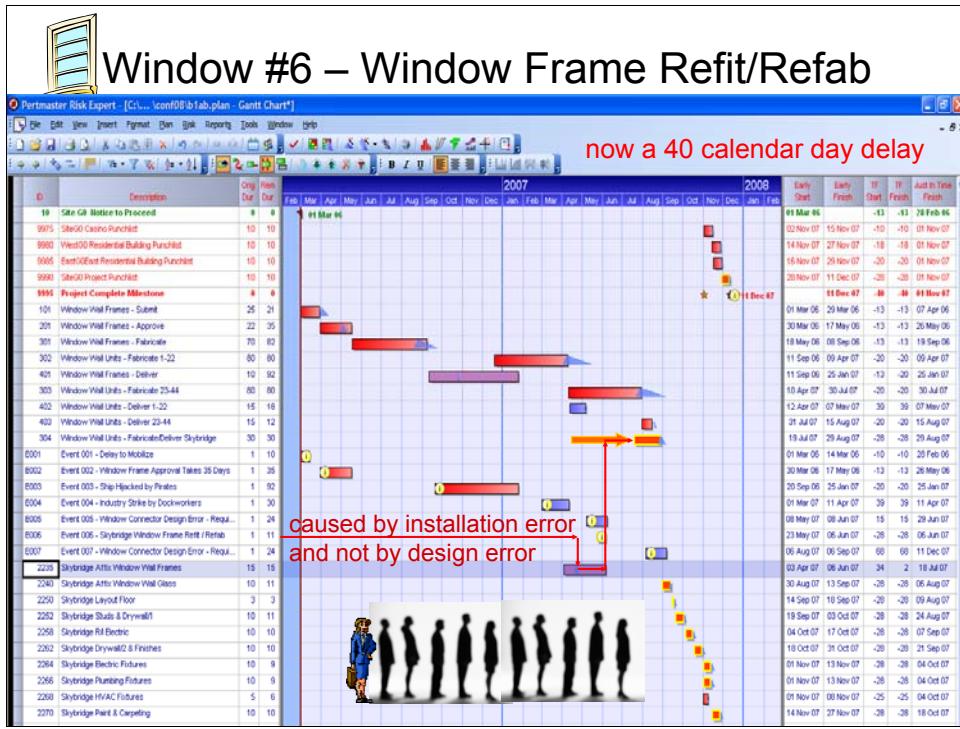
Jeff .. then Fred

The contractor's expert's testimony provides that this event never rose to the level of a delay, as the delivery of the windows had 41 days float prior to the event, this being merely reduced to 39 days since the strike ended shortly after it threatened any impact to this project.

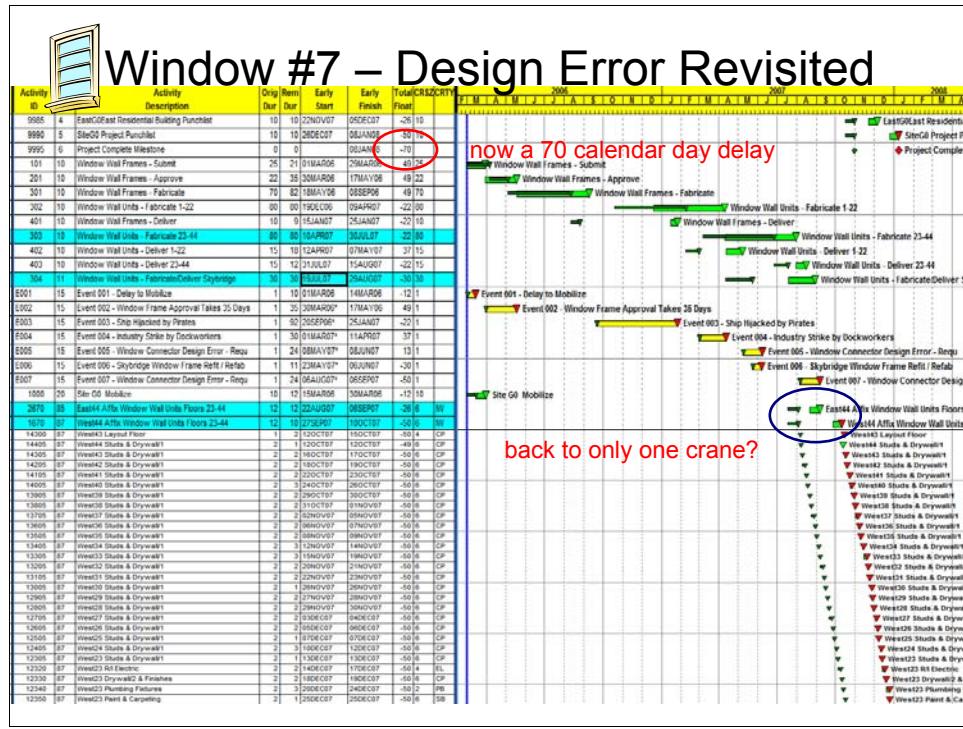


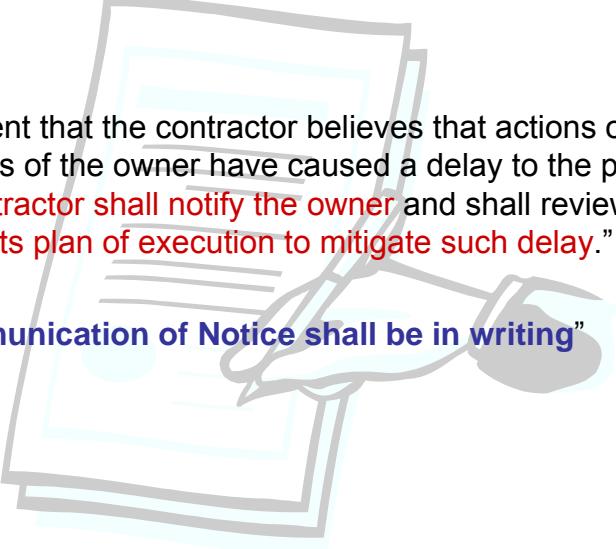
Jeff .. then Fred

The owner acknowledges the design error which is the topic of the Contractor's Window #5. However, this delay, where the contractor must spend 24 days rather than 12 for installation of the windows in each tower, eats away float, but does not cause further delay to the project. Note that there is so much float that the contractor apparently has chosen to dismantle one crane and reduce manpower to one IW crew, despite the owner's incessant demands that it work both towers concurrently.



Jeff .. then Fred .. responsibility for this causative event is disputed .. contractor claims bad design, owner claim bad installation .. SCHEDULING expert merely indicates impact of 10 calendar days



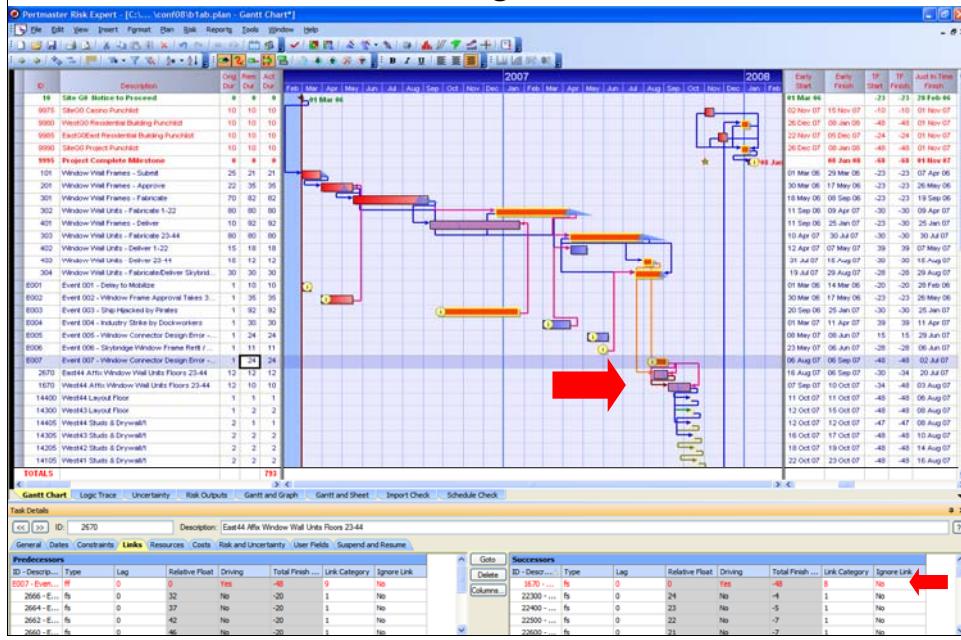


"In the event that the contractor believes that actions or inactions of the owner have caused a delay to the project, **the contractor shall notify the owner** and shall review and **modify its plan of execution to mitigate such delay.**"

"All communication of Notice shall be in writing"

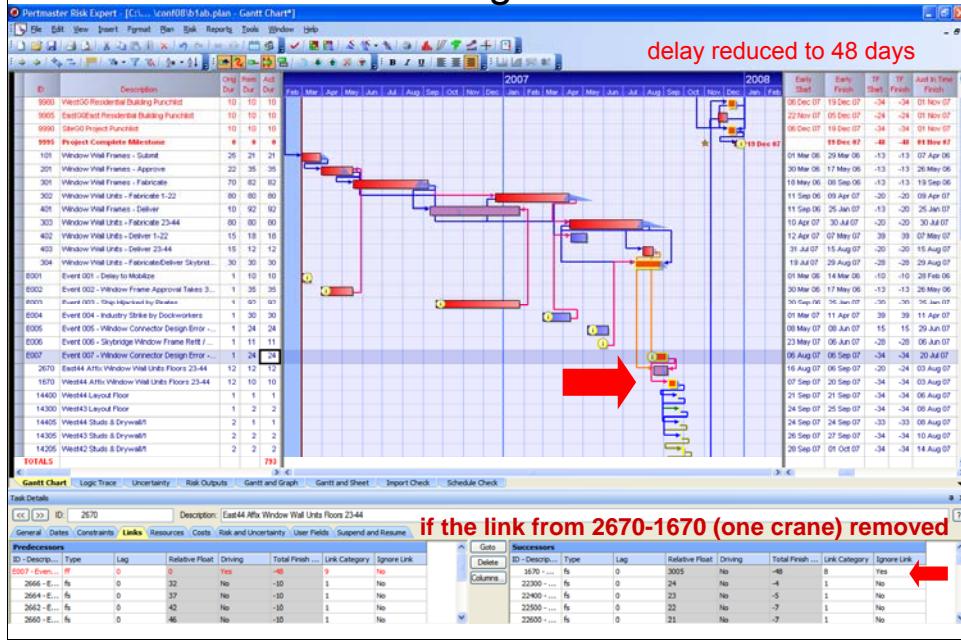
if the contractor felt it would be delayed by the design error, it had a duty to notify the owner - in writing - and to propose a mitigation plan. even if the contractor believed it had the right to use only one crane and crew, it had a duty to quote a price to perform according to the specification (according to the owner) or accelerate (according to the contractor)

Window #7 – Design Error Revisited



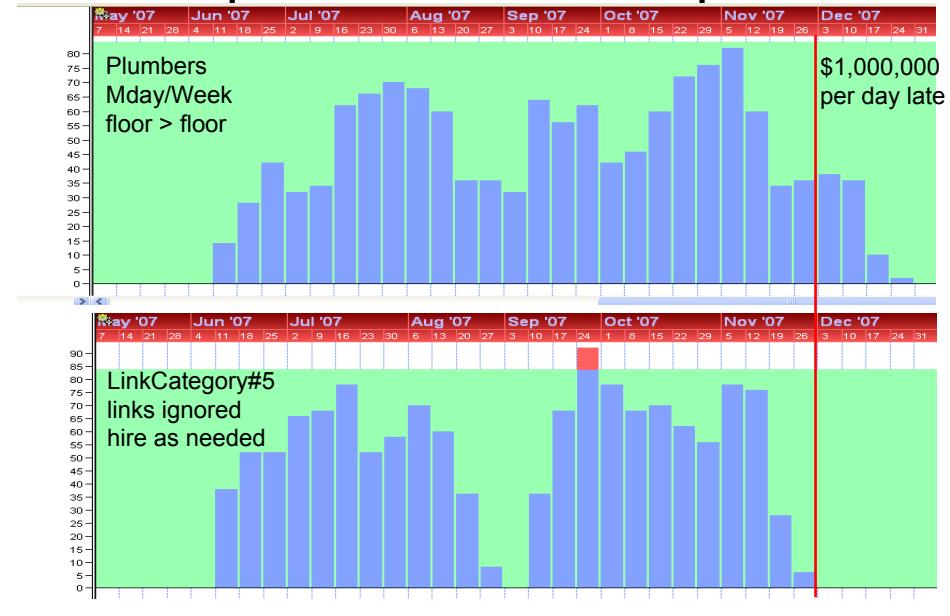
Fred – if we ignore the logic link showing one tower at a time ... [next slide]

Window #7 – Design Error Revisited



project delay drops back to the previous 40 days – thus the entire delay attributed to window #7 is because of this one restraint between #2670 and #1670

Compare Contractor Options



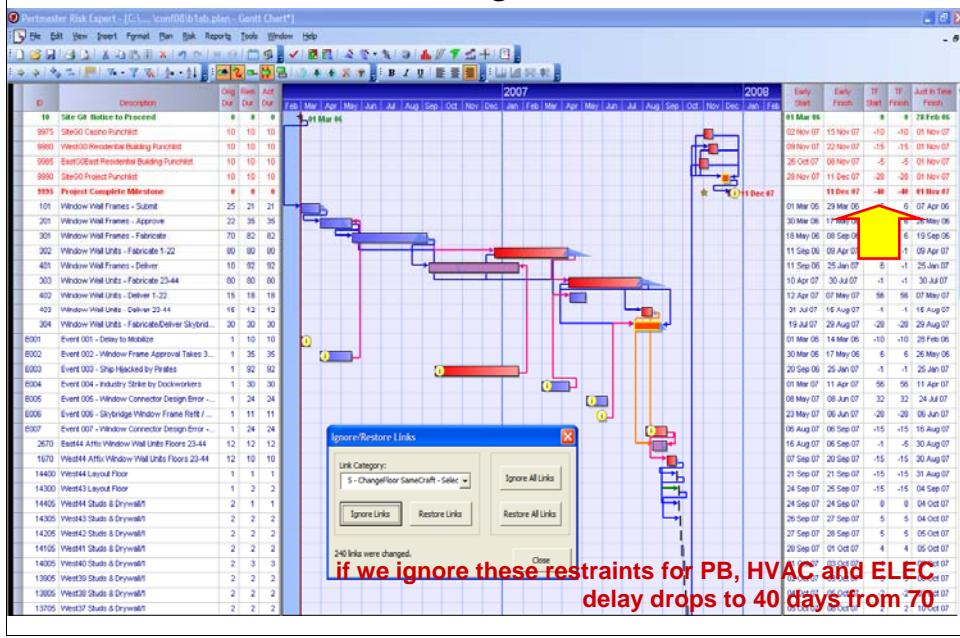
Jeff .. then Fred

Fred – other savings if resource links ignored and contractor brings in multiple crews for fit-out of hotel rooms

for example – for hotel room utility work – Plumbers – HVAC – Electricians – a savings of over one month (~30 calendar days)

and without raising hiring levels to unsustainable levels –(but may increase hiring/layoff cycle)

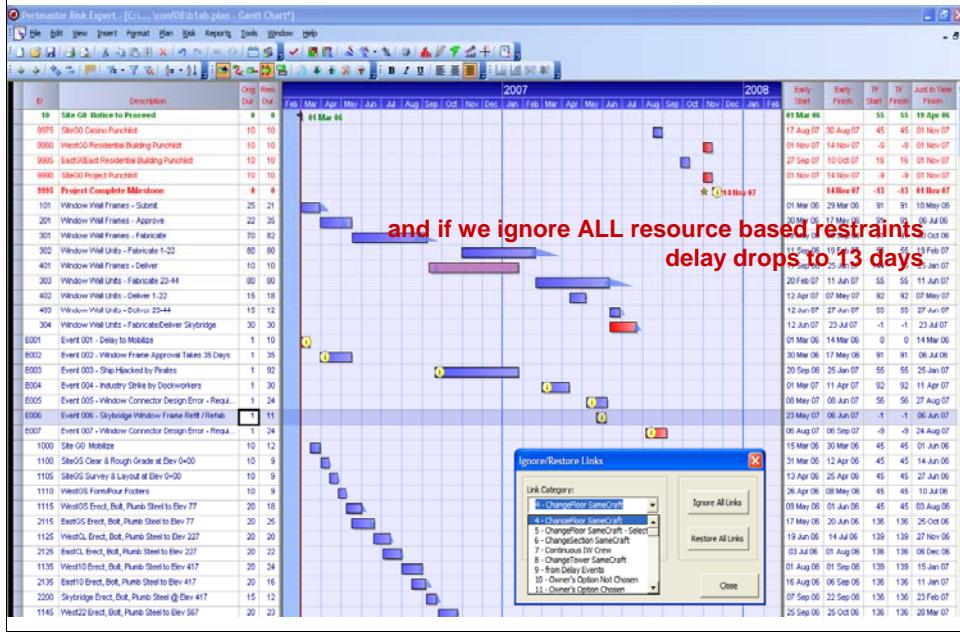
Window #7 – Design Error Revisited



Fred – if instead of going to two IW crews (thus continuing using only one crane) contractor had increase PB, HVAC and ELEC crews (or subs) .. same drop back to 40 days – no further delay

Whatever contractor wanted to charge for either of these efforts is far less than \$30,000,000 casino lost by opening even 2½ months later than caused by previous delays.

Window #7 – Design Error Revisited



Fred – had contractor used all these opportunities to mitigate, total delay caused by its dalliance with the pirates would be reduced to 13 days.

Conclusions

Activity ID	Title Description	OrigDur	ActDur	Constraint
EM1	Event 001 - Delay to Minimize	1	10	1-Mar-06
E002	Event 002 - Window Frame Approval Takes 35 Days	1	35	30-Mar-06
E003	Event 003 - Ship delayed by Weather	1	12	20-Sep-06
E004	Event 004 - Industrial Supply Backlog	1	30	1-May-07
E005	Event 005 - Window Connector Design Error - Requires 2X duration to Install Floors 1-22	1	24	0-May-07
E006	Event 006 - Skybridge Window Frame Reft / Refab	1	11	23 May 07
E007	Event 007 - Window Connector Design Error - Requires 2X duration to Install Floors 23-44	1	24	6-Aug-07

CLAIMED DELAYS

- E001 – Owner Responsible – No impact if Contractor used two cranes
- E002 – Owner Responsible (for over 22 days only) – No impact – Used float
- E003 – Contractor Responsible – by failure to mitigate – to 30 days late
- E004 – Force Majeure – No impact – Used float
- E005 – Owner Responsible – No impact – Used float
- E006 – Contractor Responsible – installation error – to 40 days late
- E007 – Owner Responsible – no impact if Contractor used added crews
 - Contractor had duty to work both towers at same time
 - Contractor had duty to mitigate with added crews (small cost)

Owner entitled to full 70 days = \$70,000,000 L/D's

Jeff .. then Fred .. conclusions

Cross-Examination



Dan shows off cross examination technique

Closing Arguments



Three minutes each please



John will have lots of fun

Questions?

- Hon. John M. Marshall
 - mc2judge@aol.com
 - 214-364-6226
- Daniel D. McMillan, Esq.
 - DDMcMillan@jonesday.com
 - 213-243-2582
- Jeffrey B. Kirzner, Esq.
 - jkirzner@jonesday.com
 - 949-553-7533
- James J. O'Brien, P.E.
 - jimobriended527@aol.com
 - 856-829-9480
- Fredric L. Plotnick, P.E., Esq.
 - fplotnick@fplotnick.com
 - 215-885-3733

Fred as Moderator