

MOCK TRIAL
CONSTRUCTION CPM CONFERENCE
JANUARY 15 2011
JANUARY 20 2020

But What I Meant To Say ...

NOTES

Barchart v CPM

Back to 367 F. 2d 473 (1966)?

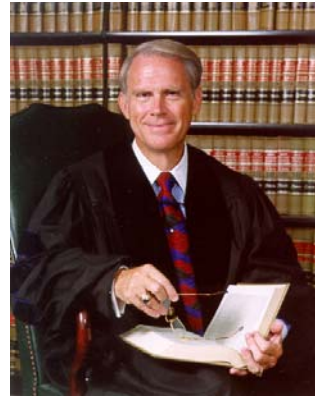
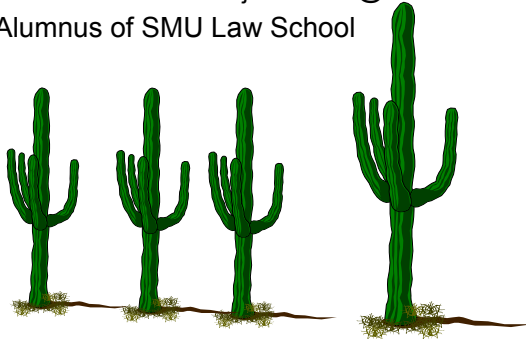
Or 347 F Supp 17 (1972)? Or 382 N.E. 2d 453 (1978)?

Or AACEi 29RP-03 MIP 1.0 (20xx)?

Hon. John M. Marshall

Presiding

- Senior Judge of the 14th Judicial District Court, Dallas County, TX
- **MC² LEGAL, PLLC**
University Park, TX 75205
214-361-1107 jmmvmi65@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 Lund III, Esq.

Attorney for the contractor

- Phelps Dunbar LLP
New Orleans, LA
504-584-9325 - daniel.lund@phelps.com
- Dan principally represents general contractors, major subcontractors, sureties, public and private owners, and wireless telecommunications carriers and owners of telecommunications infrastructure.



phelps

by Martha

Dan will be acting as the attorney for the contractor today

<<need additional bio data>>

Martha Y. Curtis, Esq.

Attorney for the owner

- Sher Garner Cahill Richter Klein & Hilbert, LLC.
New Orleans, LA
504-299-2111 - mcurtis@shergarner.com
- Ms. Curtis was one of the founding members of Sher Garner law firm when it opened its doors in January, 1999. It has since grown into one of the top New Orleans law firms with over 40 attorneys and more than 80 employees.
- Since the BP Oil Spill from the Deepwater Horizon in August 2010, Ms. Curtis has been actively representing affected claimants, including for-profit and non-profit entities and individuals asserting business economic loss and property damage claims.



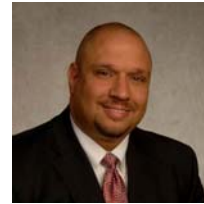
by Dan

Martha will be acting as the attorney for the owner today

<<need additional bio data>>

Jeffrey Milo, PSP

Jeffrey is a dedicated professional with over 28 years of experience in construction scheduling and project controls working on both public and private construction projects. In his current position Jeffrey has developed and implemented the planning and scheduling program at Landmark Construction, the nations leading developer and builder of student housing, and now manages the program company wide overseeing each construction teams execution of the work in accordance with the CPM schedule. He is responsible for reporting directly to executive management on the status of each project under construction.



Jeffrey also has extensive experience working on a wide variety of construction projects including Heavy Civil, Commercial, Health Care, Industrial, Waste Water Treatment, Education, and Federal / Local Government public works projects for agencies such as USACE, NAVAC, GSA, DOD, & LAUSD as a Regional Manager of Planning & Scheduling at Brasfield & Gorrie, and Scheduling Manager for Suffolk Constructions West Coast Region.

Jeffrey's past experience also includes teaching Planning & Scheduling, Estimating, and Construction Management classes at Wentworth Institute of Technology in Boston, MA as an adjunct professor.

Jeffrey currently sits as Chair of the AACE Planning and Scheduling Subcommittee, A position he has been elected to, by its members, since 2015

By Fred

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

Expert for the Owner



- Engineering & Property Management Consultants, Inc.
261 Old York Road #732 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. – Temple U. – Philadelphia, PA
- Co-Author: *CPM in Construction Management*
- Co-Author: *Contracts and the Legal Environment for Engineers & Architects*
- 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 co-author to Jim O'Brien's classis CPM in Construction Management.

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.

Lesson Plan



- Law – Best Evidence Rule
- CPM – software yields different results
- Daubert – explainable – repeatable
- Voir Dire – is the expert accepted by court?
- Contractor's Case – Direct – Cross – Re-Direct
- Owner's Rebuttal – Direct – Cross – Re-Direct
- Owner's Alt. Rebuttal – New Software – New Rules

by Fred – intro

by John, Martha, Dan on Best Evidence Rule – Barchart versus a proper CPM

by Jeff, Fred on why different software calculates differing answers, why this may be less a problem running the job than litigating the claim

by John, Martha, Dan on Why Daubert demands repeatability and explanation

by Fred on our lesson plan today will include ...

Trade Terminology

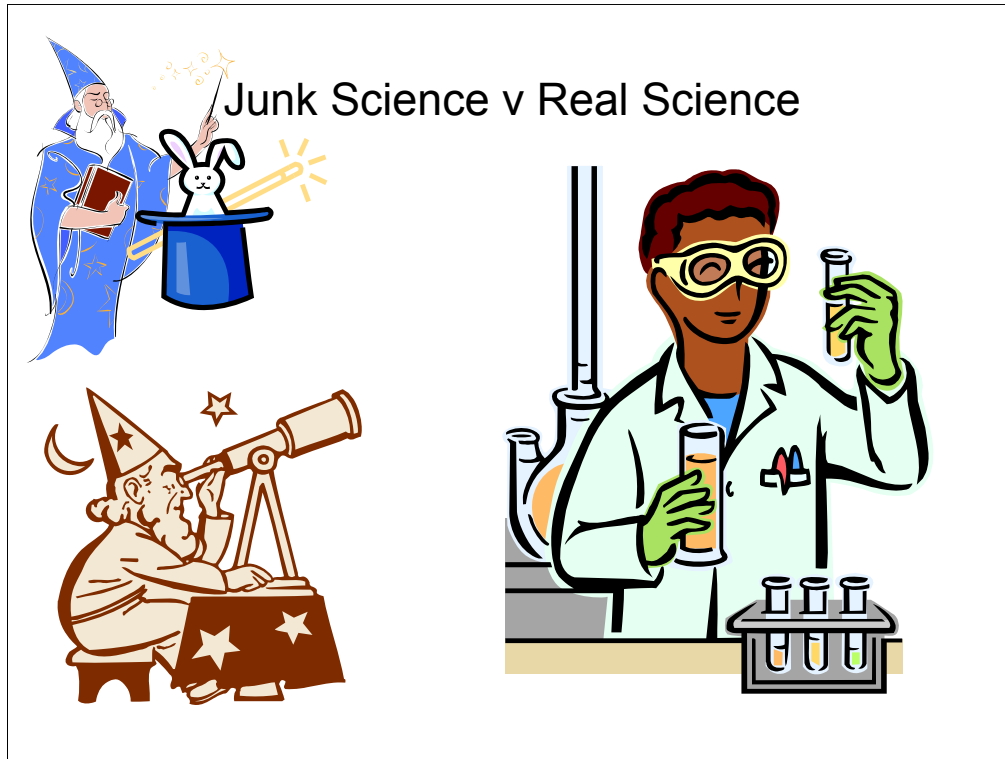


- What is meant by “a 2x4”?
 - What is meant by “an activity”?
 - What is meant by “overlap A & B by 50%”? by “10 days”?
 - What is meant by “when A 50% complete, start B”?
 - Which takes priority? What is meant? What software records?
-
- Trade terminology issues for schedulers?

by Fred – intro and explain how differing software uses differing definitions of “overlap A & B by 50%”

by Jeff on some other loose and thus imprecise terminology used in construction

by John, Martha, Dan on why this may be a bigger issue for litigation (than “usually just glossed over in the field”)



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

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.

Pre-CPM Claims of Delay

- Generally, if two parties claim concurrent delays, the court will not try to unravel the factors involved and will disallow the claims by both parties. In *United States vs. Citizens and Southern National Bank*, 367 F. 2d 473 (1966), a subcontractor was able to show delay damages caused by the general contractor. However, the general contractor, in turn, was able to demonstrate that portions of the damages were caused by factors for which he was not responsible. In the absence of clear evidence separating the two claims, the court rejected both claims, stating:

“As the evidence does not provide any reasonable basis for allocating the additional costs among those contributing factors, we conclude that the entire claim should have been rejected.”

CPM in Construction Management, 8th Edition, page 647

by Fred – READ – others DISCUSS

Post-CPM Claims of Delay

- **The courts gave early recognition to the validity of CPM. In 1972** (Appeal of *Minmar Builders, Inc.* GSBCANo. 3430, 72-2 BOA), the court rejected a claim based on bar graph schedules, stating:
“The schedules were not prepared by the Critical Path Method (CPM) and, hence, are not probative as to whether any particular activity or group of activities was on the critical path or constituted the pacing element for the project.”
- Also in 1972, a Missouri Court (*Natkin & Co. v. Fuller*. 347 F Supp 17) stated that bar charts did not “afford an overall coordinated schedule of the total work covered by the contract.”
- An Illinois court (*Pathman Construction Co. v. Hi-Way Electric Co.* 65 Ill. App. ad 480, 382 N.E. 2d 453, 460) in 1978 noted that
“technological advances and the use of computers to devise work schedules and chart progress on a particular project have facilitated the court’s ability to allocate damages.”

CPM in Construction Management, 8th Edition, page 637

by Fred – READ – others DISCUSS

The courts gave early recognition to the validity of CPM. In 1972 (Appeal of *Minmar Builders, Inc.* GSBCANo. 3430, 72-2 BOA), the court rejected a claim based on bar graph schedules, stating: "The schedules were not prepared by the Critical Path Method (CPM) and, hence, are not probative as to whether any particular activity or group of activities was on the critical path or constituted the pacing element for the project."

Also in 1972, a Missouri Court (*Natkin & Co. v. Fuller*, 347 F Supp 17) stated that bar charts did not "afford an overall coordinated schedule of the total work covered by the contract." An Illinois court (*Pathman Construction Co. v. Hi-Way Electric Co.* 65 Ill. App. ad 480, 382 N.E. 2d 453,460) in 1978 noted that "technological advances and the use of computers to devise work schedules and chart progress on a particular project have facilitated the court's ability to allocate damages."

Early courts stressed the transparency of the original CPM presentations. This may be compared to the court's reaction to the modern variant of PDM as cited in *Donahoe Constr Co.* ASBCA #47,310 et al. 98-2 BCA ¶30,076 (1998.) This case, as discussed in *Construction Scheduling, Preparation, Liability and Claims*, 2nd edition, by Jon Wickwire, Thomas Driscoll, Stephen Hurlbert, and Scott Hillman (Aspen,) notes that the court found "the utility of the baseline CPM schedule as a benchmark for measuring delays in a window analysis was rendered largely ineffective due to improper use of leads and lags." Perhaps the most succinct comment by the court in this 1992 case was that the court found incredible the contractor's expert analysis that "only the first five days of each activity [footings and slab on grade] were on the critical path." Perhaps only a portion of the footing and slab were critical, but since there was only one activity each without detail, the court was not going to take the "say so," by even a well-respected expert.

Thus the shift from more difficult to code to a computer but transparent ADM to the more easy to enter to a computer but opaque PDM could not come at a more problematic time than as the courts transformed from the *Frye*, or "follow the expert you feel more credible," approach to the *Daubert*, or "show me, Mr. Expert, what you did," standard now used in federal and many state courts. The key to the early legal recognition of CPM was its total simplicity once it was explained. But as computers got more powerful, software incorporated new features and extensions that might not be deemed so simple.

Generally, if two parties claim concurrent delays, the court will not try to unravel the factors involved and will disallow the claims by both parties. In *United States vs. Citizens and Southern National Bank*, 367 F. 2d 473 (1966), a subcontractor was able to show delay damages caused by the general contractor. However, the general contractor, in turn, was able to demonstrate that portions of the damages were caused by factors for which he was not responsible. In the absence of clear evidence separating the two claims, the court rejected both claims, stating:

As the evidence does not provide any reasonable basis for allocating the additional costs among those contributing factors, we conclude that the entire claim should have been rejected.

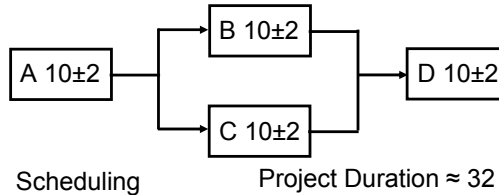
Similarly, in *Lichter vs. Mellon-Stuart*, 305 F. 216 (3d Cir. 1962), the court found that the facts supported evidence of delay imposed on a subcontractor by a general contractor. It also found that the work had been delayed by a number of other factors including change orders, delays caused by other trades, and strikes.

The subcontractor had based its claim for damages solely on the delay imposed by the general contractor, and both the trial court and the appeals court rejected the claim on the basis that:

Even if one could find from the evidence that one or more of the interfering contingencies was a wrongful act on the part of the defendant, no basis appears for even an educated guess as to the increased costs . . . due to that particular breach . . . as distinguished from those causes from which defendant is contractually exempt.

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

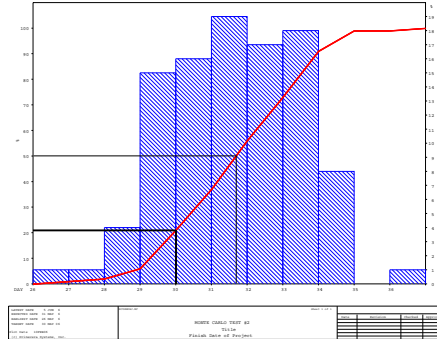
A 10 ± 2
B 10 ± 2
C 10 ± 2
D 10 ± 2
—
 ≈ 40
Estimating



CONTINGENCY

Achievement of the end date desired is unfortunately not an acceptable schedule. This is not surprising since we know that CPM has not furnished us with a crystal ball. Since the activities and times estimates used in the network are based upon experience, the project rarely finishes ahead of the computed end date. Since weather, difficult site conditions, labor disputes, etc., are unavoidable but rather unpredictable, there is a definite tendency for the actual completion date to exceed the first CPM end date. It is then reasonable to allow some contingency between the CPM end date and the actual desired completion date. How much contingency? There is no definite answer to this; it will vary with the specific circumstances of the project. However, if you need a twelve-month completion, set your CPM goal at about eleven months, and so forth. Some people have been reluctant to set a flat contingency at the end of the schedule. Contingency can be buried in the activity estimates, but if it is you won't be able to separate true estimates from contingency.

Excerpt from page 142 of CPM in Construction Management



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 than 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 require that the schedule calculated by the CPM logic network have an 80% or 90% likelihood of timely completion.

Fact Background for Mock Trial

- Dauphin Resort desires to add a General Porpoise Extension
- Work to start 17MAY - \$200,000 bonus if complete by 15NOV
- Dauphin also wants assurance of achievability
- Dauphin's artists, Doozey Design, will design/fabricate a one-lift roof structure to be placed "when needed"
- Hasty Construction prepares proposal with CPM schedule prepared with Microsoft Project - assures 95% likelihood
- Hasty and subcontractors execute project with mix of Microsoft Project and Excel, Oracle Primavera SureTrak, P3, P6, and Pertmaster, Deltek Open Plan, and other software
- Project runs late, but then completes 18NOV
- Hasty sues for \$200,000 bonus, plus \$50,000 acceleration

Fred provides factual background to today's case.

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

Direct Examination

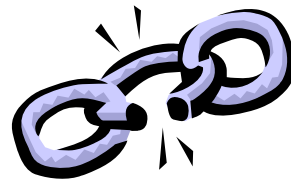
Testimony for the Contractor



SHOWTIME

Purpose of Direct Examination

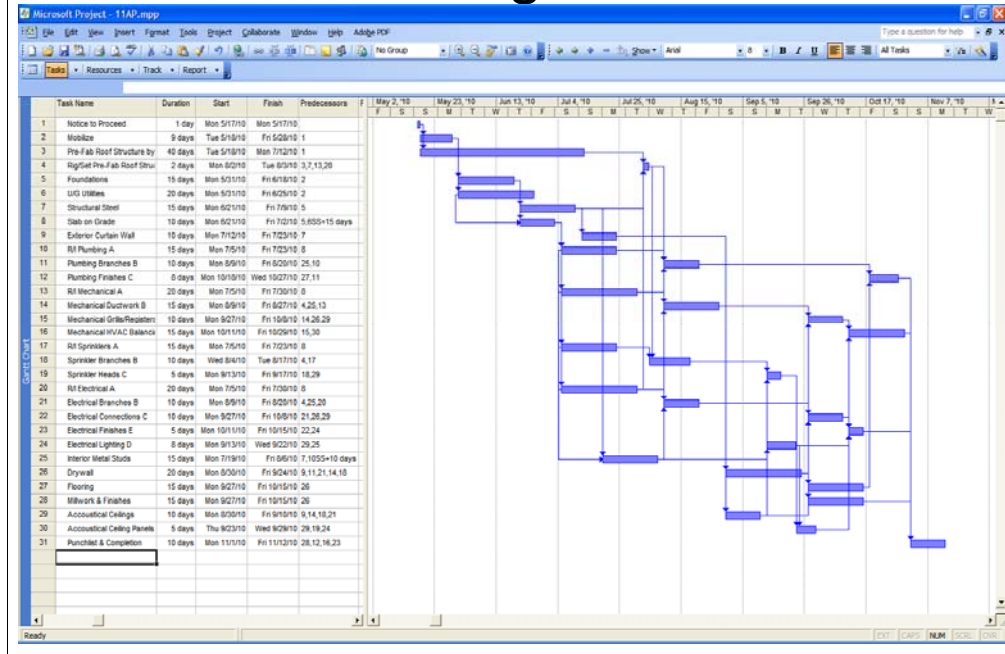
- Humanize witness -- stress credibility
- Weave expert's report into the "storyline"
- Simplify presentation of
 - assumptions
 - findings
 - analysis
 - opinions
- Defuse weak points



Text by Dan and Martha on how an attorney should conduct direct examination

Comment by Panel on demeanor of an Expert

As-Planned Logic & Schedule



EXPERT will testify:

Proposal prepared using Microsoft Project, based upon interviews with Hasty Project Superintendent, Harry Hasty.

Elicit that Microsoft chosen as “best presentation software” in opinion of original project scheduler.

Note that this printed document has been “incorporated by reference” to the Dauphin-Hasty contract.

As-Planned Logic & Schedule

Detail behind the Graphic

Notice to Proceed	1 day	5/17/2010 8:00	5/17/2010 17:00
Mobilize	9 days	5/18/2010 8:00	5/28/2010 17:00 1
Pre-Fab Roof Structure by Doozey Designs	40 days	5/18/2010 8:00	7/12/2010 17:00 1
Rig/Set Pre-Fab Roof Structure	2 days	8/2/2010 8:00	8/3/2010 17:00 3,7,13,20
Foundations	15 days	5/31/2010 8:00	6/18/2010 17:00 2
U/G Utilities	20 days	5/31/2010 8:00	6/25/2010 17:00 2
Structural Steel	15 days	6/21/2010 8:00	7/9/2010 17:00 5
Slab on Grade	10 days	6/21/2010 8:00	7/2/2010 17:00 5,6SS+15 days
Exterior Curtain Wall	10 days	7/12/2010 8:00	7/23/2010 17:00 7
R/I Plumbing A	15 days	7/5/2010 8:00	7/23/2010 17:00 8
Plumbing Branches B	10 days	8/9/2010 8:00	8/20/2010 17:00 25,10
Plumbing Finishes C	8 days	10/18/2010 8:00	10/27/2010 17:00 27,11
R/I Mechanical A	20 days	7/5/2010 8:00	7/30/2010 17:00 8
Mechanical Ductwork B	15 days	8/9/2010 8:00	8/27/2010 17:00 4,25,13
Mechanical Grills/Registers/Diffusers C	10 days	9/27/2010 8:00	10/8/2010 17:00 14,26,29
Mechanical HVAC Balancing D	15 days	10/11/2010 8:00	10/29/2010 17:00 15,30
R/I Sprinklers A	15 days	7/5/2010 8:00	7/23/2010 17:00 8
Sprinkler Branches B	10 days	8/4/2010 8:00	8/17/2010 17:00 4,17
Sprinkler Heads C	5 days	9/13/2010 8:00	9/17/2010 17:00 18,29
R/I Electrical A	20 days	7/5/2010 8:00	7/30/2010 17:00 8
Electrical Branches B	10 days	8/9/2010 8:00	8/20/2010 17:00 4,25,20
Electrical Connections C	10 days	9/27/2010 8:00	10/8/2010 17:00 21,26,29
Electrical Finishes E	5 days	10/11/2010 8:00	10/15/2010 17:00 22,24
Electrical Lighting D	8 days	9/13/2010 8:00	9/22/2010 17:00 29,25
Interior Metal Studs	15 days	7/19/2010 8:00	8/6/2010 17:00 7,10SS+10 days,13SS+10 days,17SS+10 days,20SS+10 days
Drywall	20 days	8/30/2010 8:00	9/24/2010 17:00 9,11,21,14,18
Flooring	15 days	9/27/2010 8:00	10/15/2010 17:00 26
Millwork & Finishes	15 days	9/27/2010 8:00	10/15/2010 17:00 26
Acoustical Ceilings	10 days	8/30/2010 8:00	9/10/2010 17:00 9,14,18,21
Acoustical Ceiling Panels	5 days	9/23/2010 8:00	9/29/2010 17:00 29,19,24
Punchlist & Completion	10 days	11/1/2010 8:00	11/12/2010 17:00 28,12,16,23

During execution of project, Hasty and its subcontractors used a mix of software to determine periodic status.

Post-contract completion, Hasty engaged EXPERT to prepare claim, using such contemporaneous records as available.

EXPERT chose to prepare claim in P3 “for ease of preparation and exchange of document with Dauphin experts”

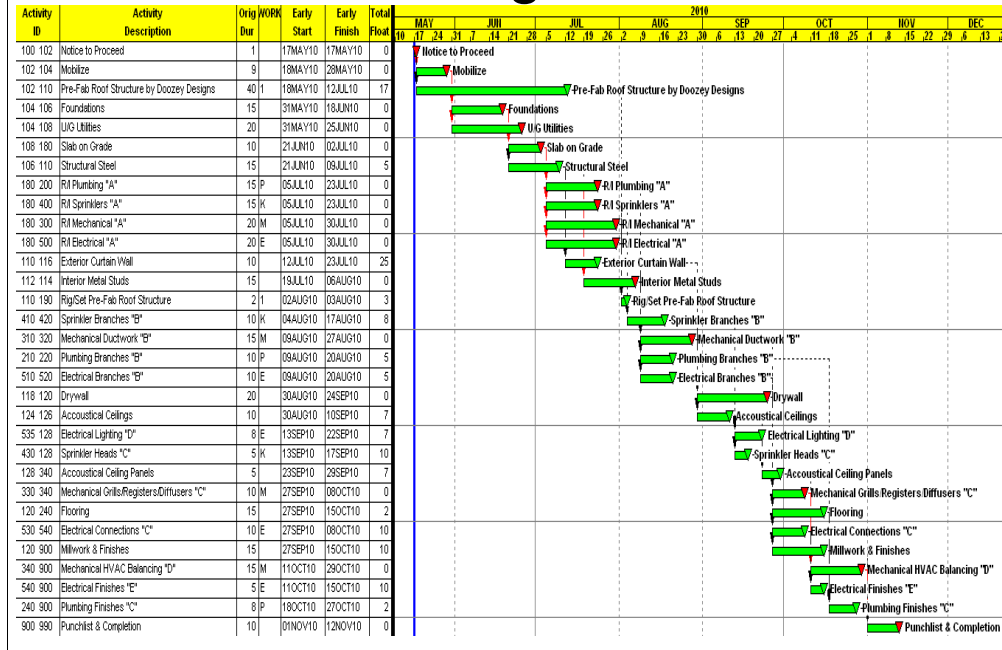
SIDEBAR on issues if computer files sent by one party may not be readable, or may calculate differing reports than that by originator

EXPERT testifies the computer files of Microsoft Project, as displayed above, are importable to other software, including the P3 product chosen

[illegible]

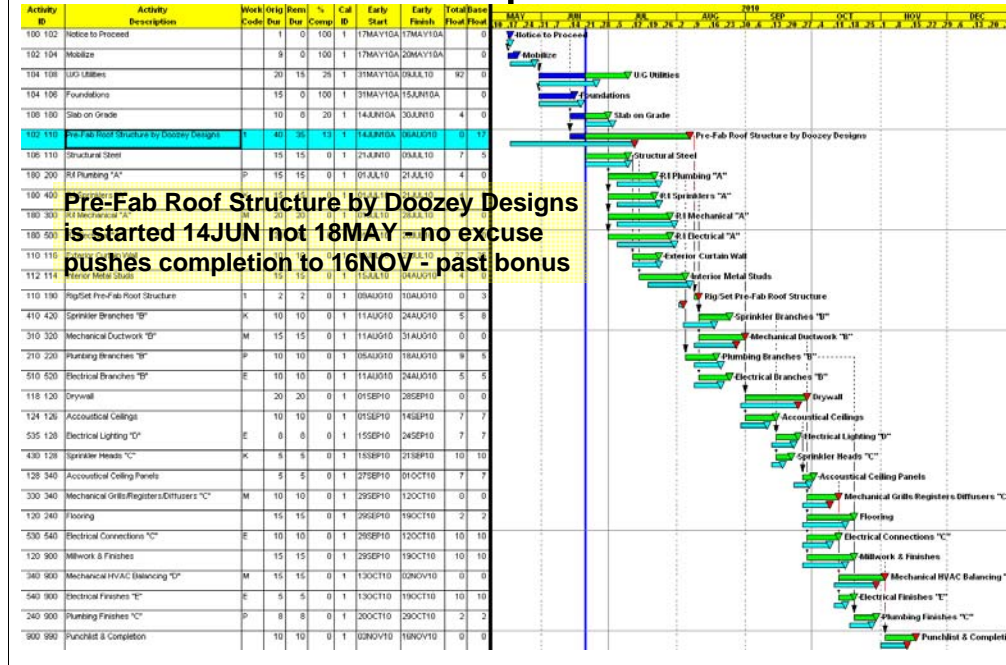
Counsel submits Exhibit which may be compared with “Contract Document” Schedule

As-Planned Logic & Schedule



EXPERT indicates the “pure logic” of prior exhibit will then calculate an identical schedule as the Microsoft Project product and contract document

Window #1 - Update of 21JUN



EXPERT will explain use of a form of Windows Analysis, this by creating Updates at various dates, utilizing data from contemporaneous records.

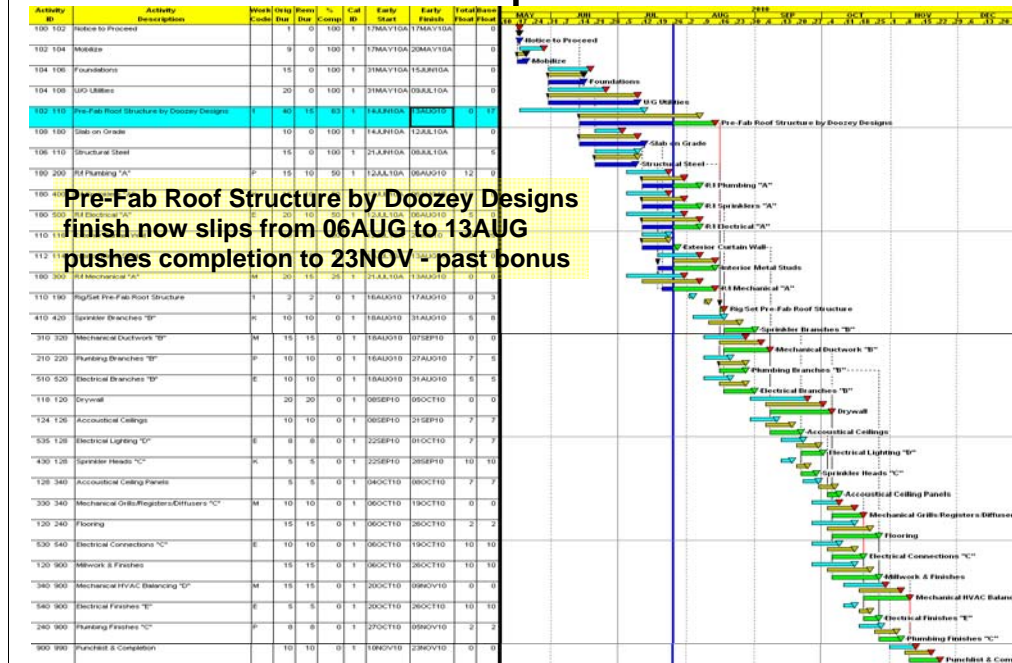
Choice of 21JUN is a project job meeting where Hasty complains that Dauphin's Doozey Design is causing a potential delay to completion by 15NOV

EXPERT will testify that records indicate that Doozey did not mobilize to work until 14JUN, claimed still needed full 40 days.

Impact of delay is to push completion of project back to 16NOV; all parties hope Hasty will be able to make up for lost time.

(EXPERT may not discuss that activity had 17 days float, thus only one day delay to project completion)

Window #2 - Update of 26JUL

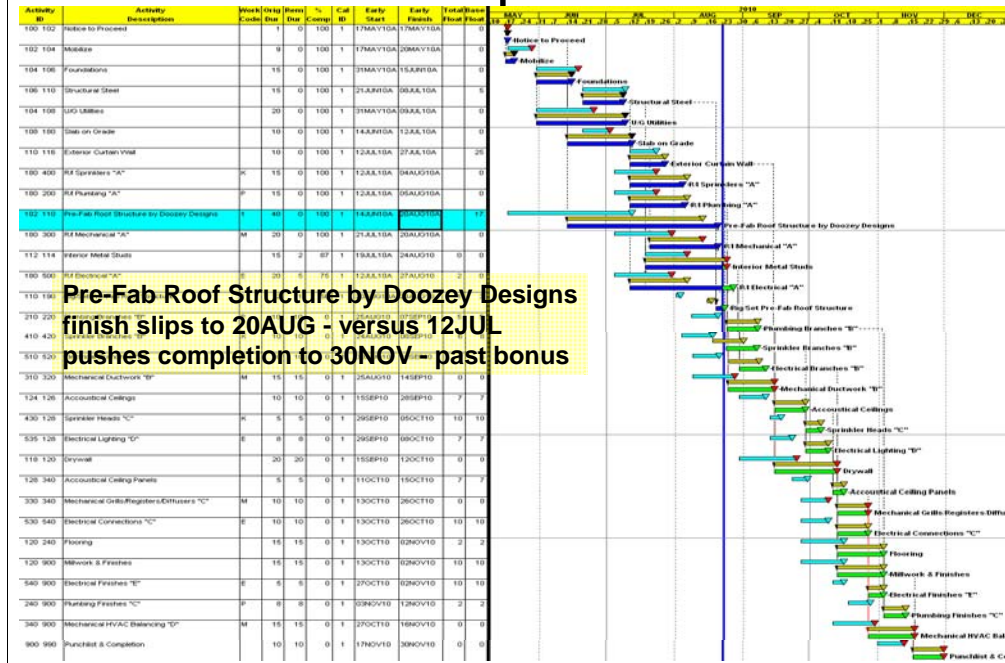


EXPERT will refer to another job meeting of 26JUL where the same complaint is made.

EXPERT will testify that records substantiate that Doozey continues to slip.

Impact of delay is to push completion of project back to 23NOV; all parties hope Hasty will be able to make up for lost time.

Window #3 - Update of 23AUG



Pre-Fab Roof Structure by Doozey Designs
finish slips to 20AUG - versus 12JUL
pushes completion to 30NOV - past bonus

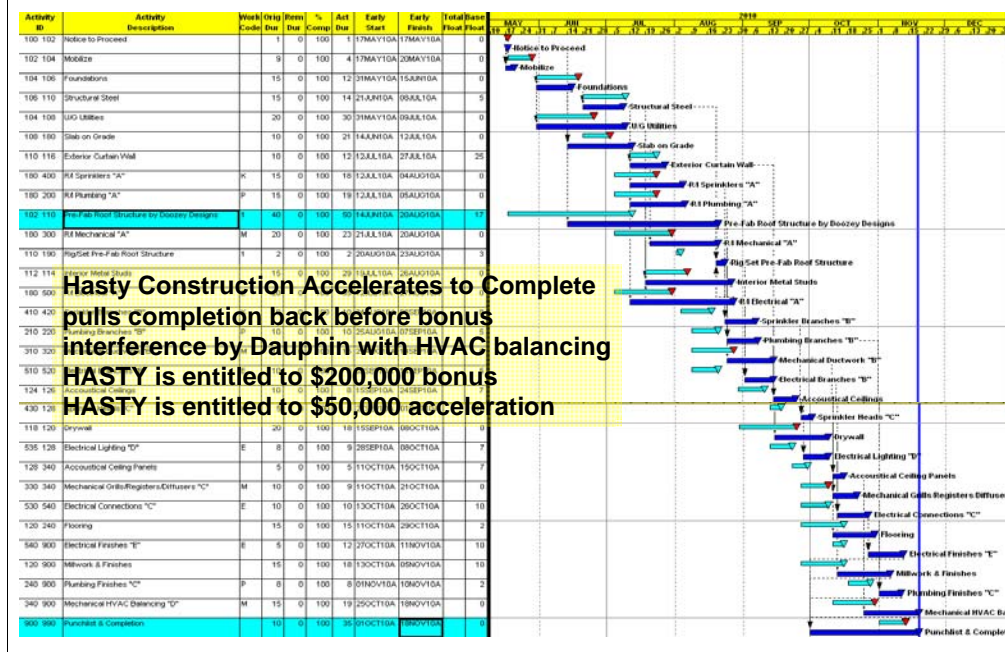
EXPERT will refer to another job meeting of 23AUG where the same complaint is made.

(Other comments made at meeting, indicating Dauphin claims that Hasty's crews are taking longer than promised, may not be noted by EXPERT)

EXPERT will testify that records substantiate that Doozey continues to slip.

Impact of delay is to push completion of project back to 30NOV; all parties hope Hasty will be able to make up for lost time.

Window #4 - As-Built Final



EXPERT will testify project completed on 18NOV, despite “every effort” by Hasty to accelerate.

EXPERT will testify that Hasty “at great expense” overlapped its punchlist and cleanup activity with substantive work in order to make up the losses caused by Doozey.

EXPERT may (perhaps waiting until cross) refer to “interference by Dauphin” to HVAC balancing effort at very end.

EXPERT will testify that Hasty entitled to full \$200,000 bonus, plus \$50,000 got partially wasted acceleration.



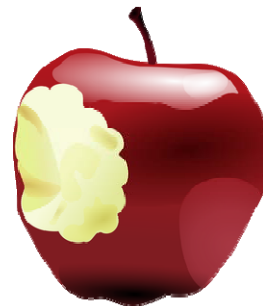
BREAK

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



Rebuttal – First Bite

- Question ability to complete on-time
- Question validity of contractor expert's model
- Question contractor expert's algorithm
- Question contractor expert's conclusion



Fred (as Moderator):

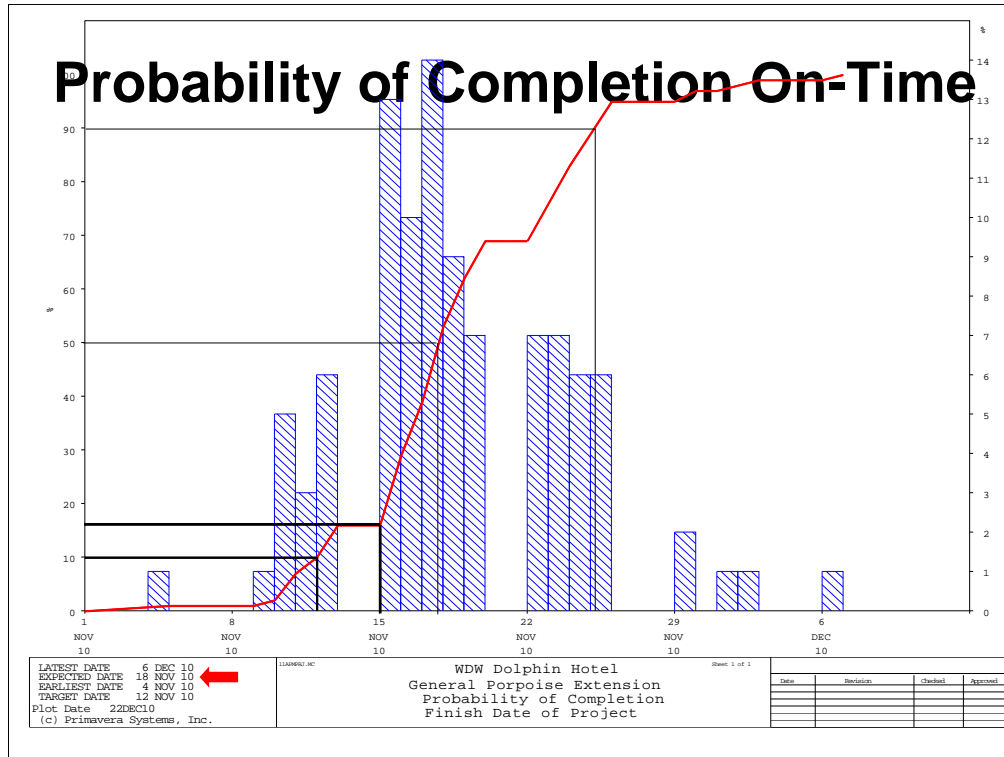
Challenges for the defense team

Cross-Examination



Martha shows off cross examination technique

Fred is hapless



FRED asked and admits Dauphin requested, Hasty provided, further and full assurances that 15NOV date was attainable - 95% probability

FRED asked of bases of Hasty assertion, and good faith of Hasty in planning and manning the project to provide not only timely completion, but assurance of timely completion

FRED asked and admits baseline schedule, subjected to risk analysis by Monte Carlo, Open Plan, or Oracle Primavera "Pertmaster" Risk Analysis, indicates:

only a 15% probability of completion by 15NOV, only a 50% probability of completion by 18NOV, only a 90% probability of completion by 29NOV

"When was the project completed?" "18NOV" "When do all these software products estimate completion using Hasty's plan?" "18NOV"

<NOTES FOR REHAB>

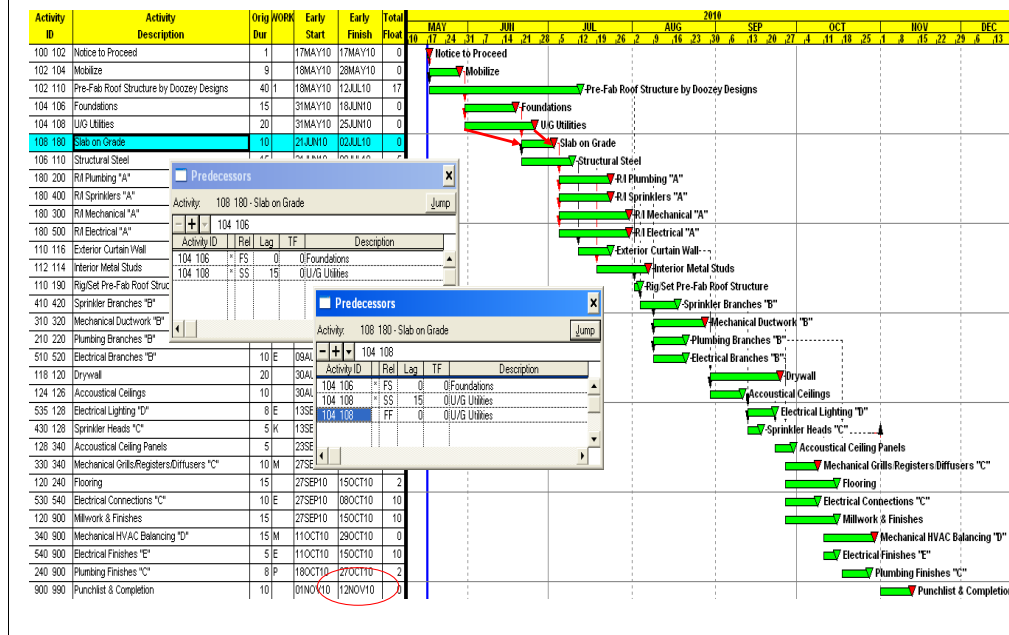
Last activity in network is PUNCHLIST & COMPLETION - 10 days.

Note "punchlist" is typically past "substantial completion."

Note many schedulers use this "activity" in lieu of a contingency.

If measuring only to the start of this activity, Risk Analysis will estimate a 90% probability of reaching this point by 16NOV.

As-Planned Logic Flow



FRED asked and admits the As-Planned logic of EXPERT has a major flaw.

While the P3 network is a precise import of the MSP network, the MSP network was not designed for purposes of delay analysis.

FRED asked and admits the underlying MSP network does not faithfully represent Harry Hasty's "plan of execution" because of limitations of MSP.

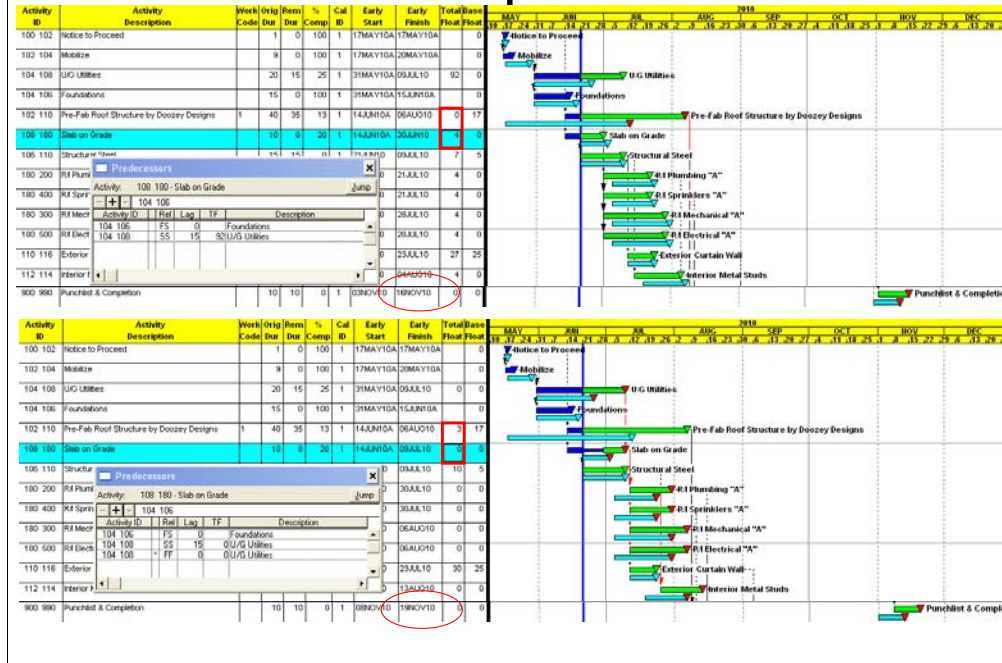
A limitation of MSP is that it can show only one restraint between two activities and therefore not show both a SS and FF restraint between the same activities.

"Viewing the relationship of U/G UTILITIES and SLAB ON GRADE, it appears clear that Harry Hasty expected to finish U/G UTILITIES before being able to pour and finish the SLAB ON GRADE" "I doubt anyone in this courtroom will suggest Harry contemplated tunneling under his newly poured slab to install these utilities."

"While some lag between finish of U/G UTILITIES and SLAB ON GRADE may also be called for, in making the minimal changes to the analysis of EXPERT, only the restraint (without lag) has been added for our rebuttal analysis."

"As may be seen on the graphic, the SS restraint continues to be more important in this instance, and this correction creates no change to the initial baseline schedule calculated for the project."

Window #1 - Update of 21JUN



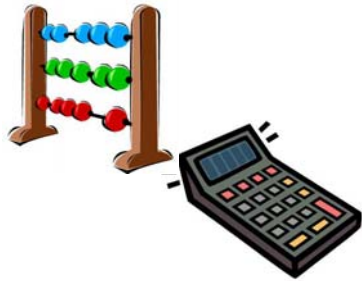
FRED asked and admits the noted correction will have an impact when calculating UPDATE OF 21JUN.

Contractor's Window #1 indicates completion pushed to 16NOV by Doozey Design

FRED asked and admits Window #1 indicates completion pushed to 19NOV by a late SLAB ON GRADE caused by slow progress on U/G UTILITIES

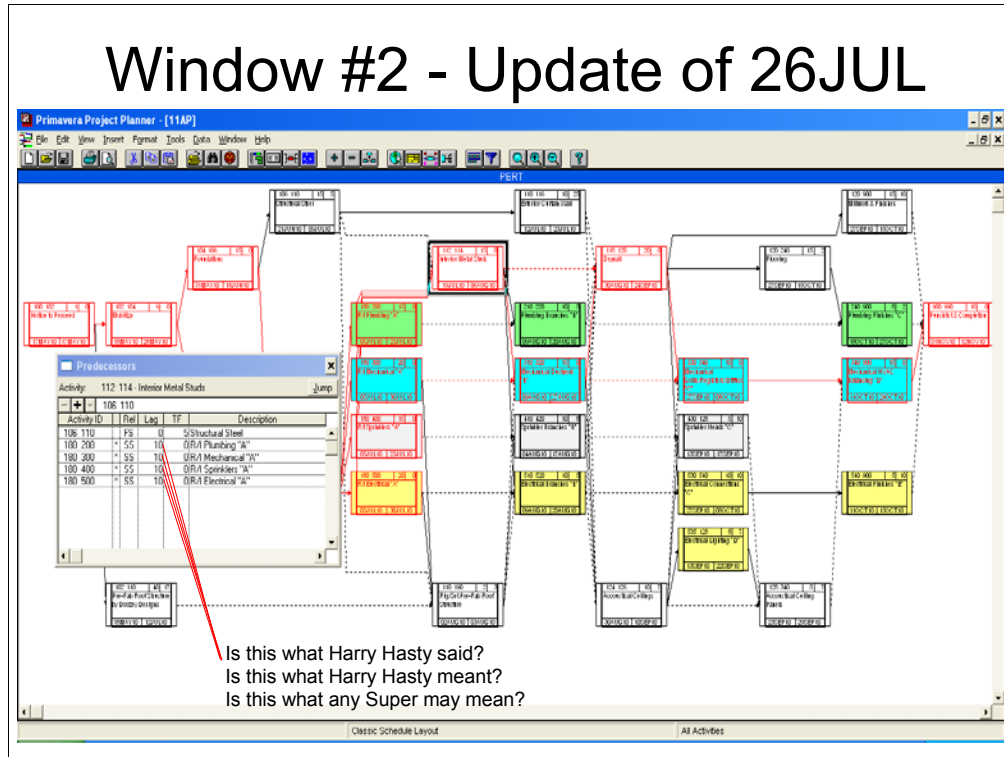
Window #2 - Update of 26JUL

- Question the accuracy of input from Harry to MSP/P3
- Question the algorithm used to calculate the update



For Window #2 UPDATE OF 26 JUL, FRED must admit :
accuracy of input from Harry to MSP/P3, and
the algorithm used to calculate the update

Window #2 - Update of 26JUL

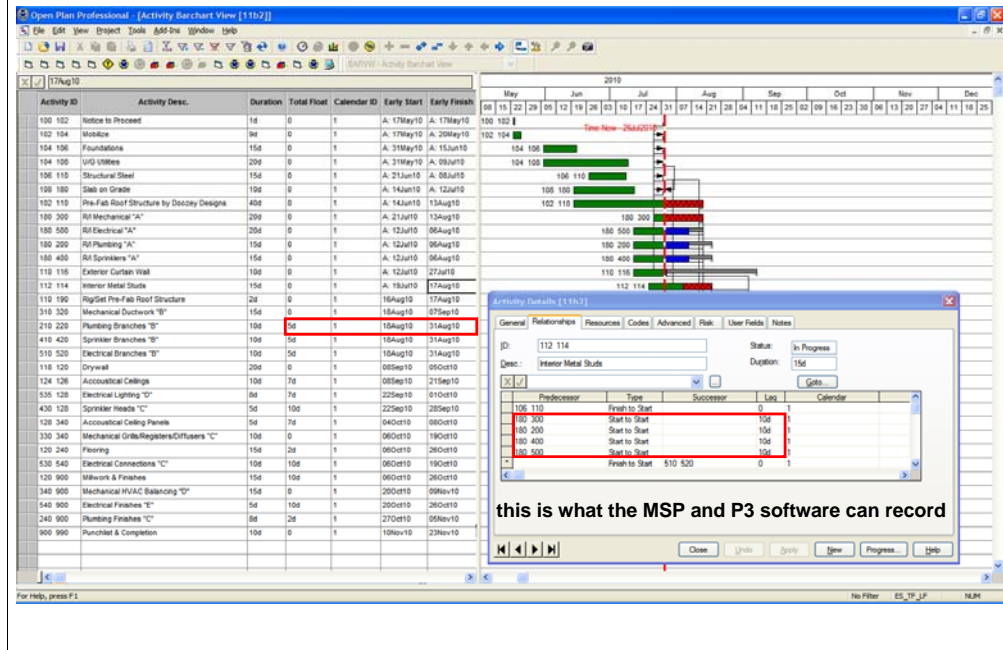


FRED asked and admits MSP/P3 logic networks indicate start of INTERIOR METAL STUDS require partial completion of various R/I activities (but not completion of such to finish)

FRED asked and admits he disagrees that is what was said or meant by Harry Hasty, and believes this too is an artifact of MSP limitations, but conservatively does not address this issue.

FRED asked and admits he disagrees that Harry Hasty said or meant "INTERIOR METAL STUDS may start 10 days after MECHANICAL R/I" and more likely said or meant "INTERIOR METAL STUDS may start when 10 days or 50% work on MECHANICAL R/I has been performed."

Window #2 - Update of 26JUL

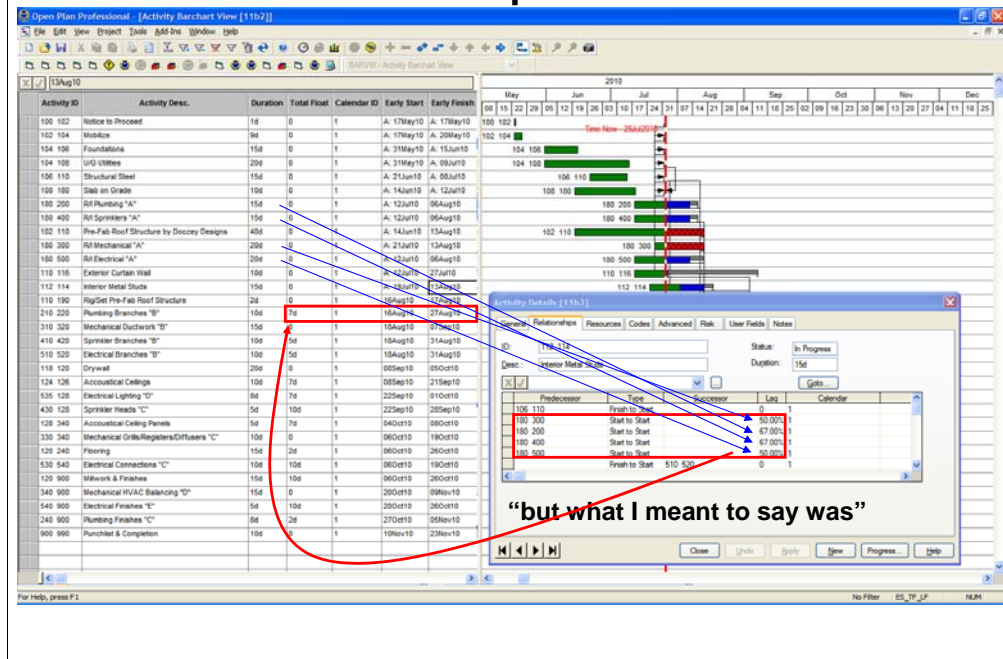


FRED asked and admits other software, such as Deltek Open Plan, can distinguish between saying:

“INTERIOR METAL STUDS may start 10 days after MECHANICAL R/I” and
 “INTERIOR METAL STUDS may start when 10 days or 50% work on MECHANICAL R/I has been performed.”

In this case noting that the use of the former calculates finish of STUDS on 17AUG and PLUMBING R/I to have 5 days float

Window #2 - Update of 26JUL

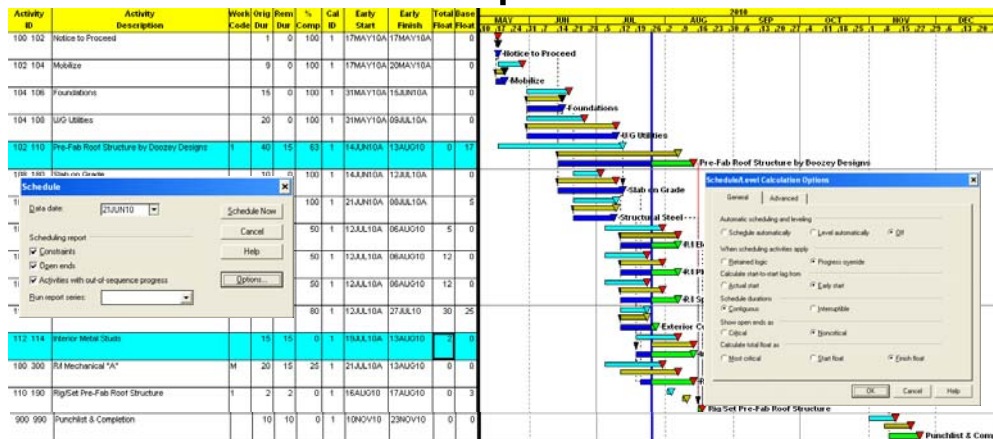


But

In this case noting that the use of the latter calculates finish of STUDS on 13AUG and PLUMBING R/I to have 7 days float

FRED asked and admits such testimony merely to illustrate the impreciseness of Contractor's analysis and not to burden the Court with yet another analysis by yet a third software product.

Window #2 - Update of 26JUL



Progress Override v Retained Logic

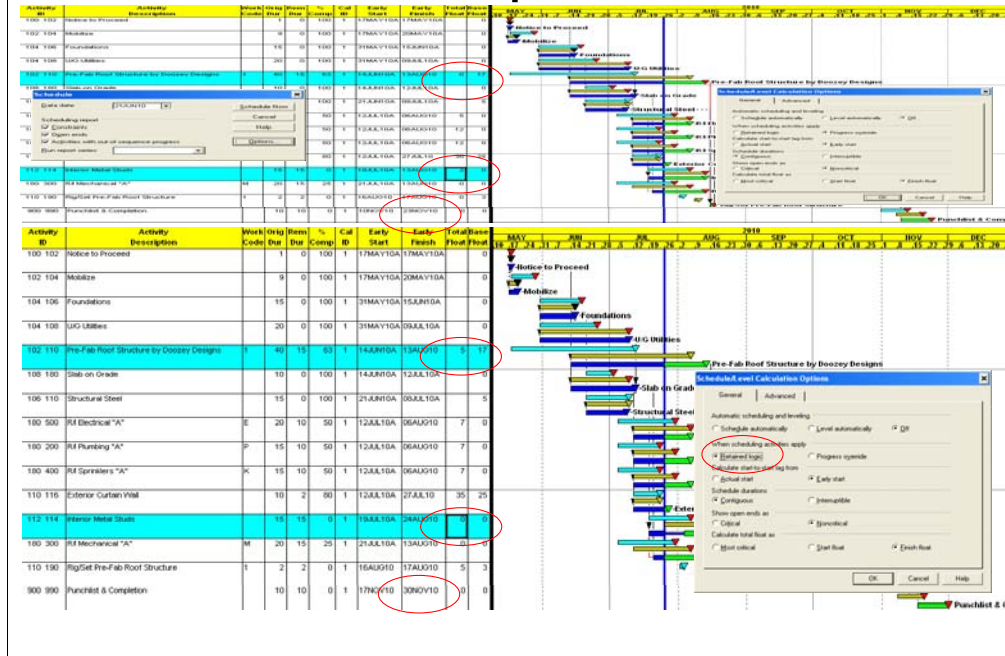
FRED asked and admits that P3 has several “calculation modes which will yield differing results”

One choice of mode is that of Progress Override versus Retained Logic.

While Retained Logic is the default of P3, Contractor’s analysis for its presentation in this case used Progress Override.

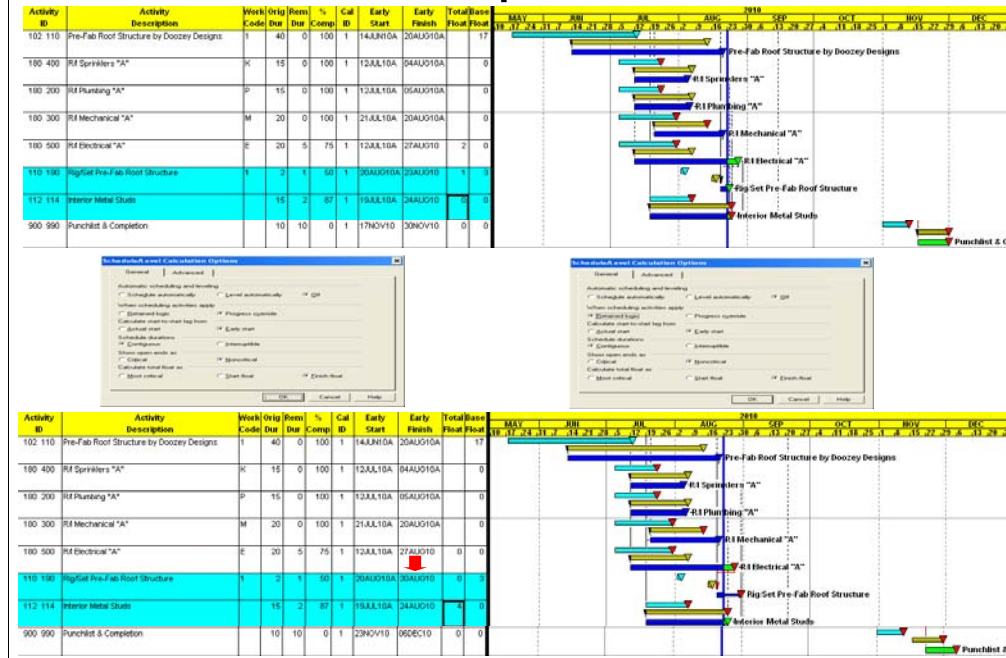
And thus its Window #2 UPDATE OF 26JUL indicates the cause of delay to timely completion to be Doozey Design, while its work on INTERIOR METAL STUDS has two days float.

Window #2 - Update of 26JUL



FRED asked and admits that use of the default Retained Logic mode of calculation indicates a project pushed back not to 23NOV but to 30NOV, and that the cause is slow progress on INTERIOR METAL STUDS, while work by Doozey Design has five days float.

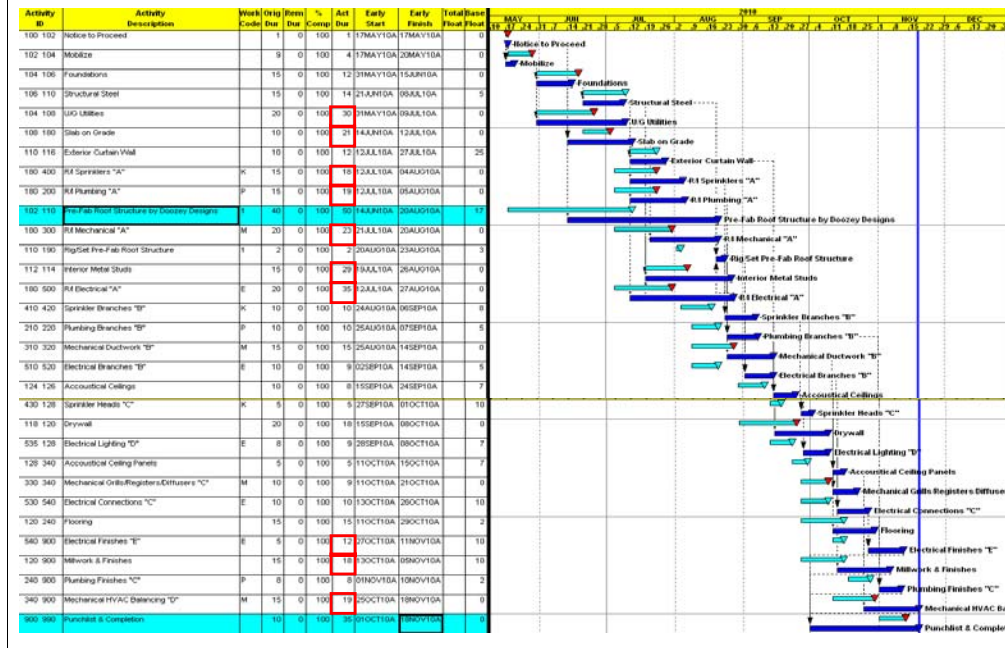
Window #3 - Update of 23AUG



FRED asked and admits the choice of Retained Logic or Progress Override is not a clear decision, and perhaps should be selectable on a restraint-by-restraint basis in “dream software”

For Window #3 UPDATE OF 23AUG, use of Retained Logic would improperly calculate delay to RIG/SET PRE-FAB ROOF STRUCTURE by the incomplete R/I ELECTRICAL “A” even though it is clear to any Expert that once the roof is in process of being rigged, it will continue through to completion (even though “out-of-sequence”) and remaining electrical rough-in work will be performed after the roof is on.

Window #4 - As-Built Final



FRED asked and admits that Contractor's failure to achieve timely completion by the agreed deadline is due to repeated failure to achieve timely completion of activities during the course of the project.

FRED asked and admits Doozey Design took 50 days rather than 40, but had 17 days float, and did have its roof ready for lift when Hasty was ready.

FRED asked and admits that Contractor provides no substantiation that Dauphin "interfered with HVAC balancing," comments that "having one room at 90 degrees and another at 50 degrees is not balanced nor acceptable," suggests Hasty did not include enough time for this activity in its initial schedule, and that the "contingency" provided by its PUNCHLIST activity was indeed needed for this task.

Re-Direct Examination



Martha explains Fred was coached not to argue with Dan

Will give one example of rehabilitation

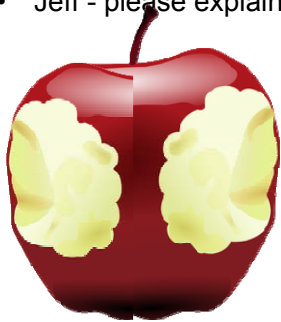
Dan and Martha will note many attorneys may fail here leaving expert perhaps looking foolish

John will note the expert being left looking foolish is not the expert's fault in such a situation

Jim may note desire (not always possible) for expert to educate attorney in advance for typical dangerous cross questions

Second Bite at the Apple

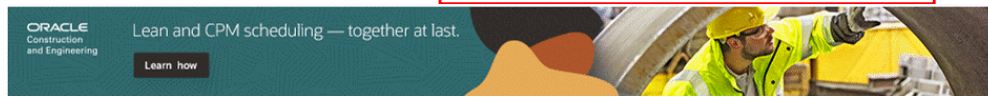
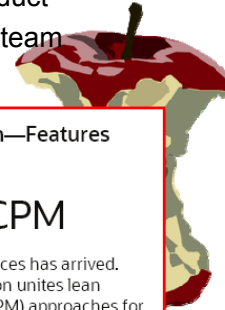
- Owner defends based upon Contractor's use of new Oracle software
- Contractor initial schedule submittal was made with Microsoft
- Contractor ran project using new Oracle Lean+CPM product
- Jeff - please explain and discuss benefits for the project team



Oracle Lean Scheduling Solution—Features

Unites Lean and CPM

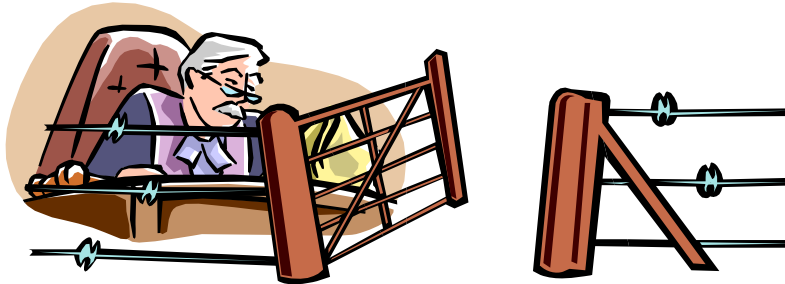
The next generation of scheduling practices has arrived. This cloud-based, mobile-enabled solution unites lean construction and critical path method (CPM) approaches for complete coordination and more successful and profitable projects.



Jeff – this kicks off your Alternate Rebuttal based upon CONTEMPORARY RECORDS and Lean+CPM updates provided by contractor to owner
You will need several additional slides – please send to Fred to add to deck

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 Martha

Voir Dire of Jeffrey Milo, PSP

Jeffrey is a dedicated professional with over 28 years of experience in construction scheduling and project controls working on both public and private construction projects. In his current position Jeffrey has developed and implemented the planning and scheduling program at Landmark Construction, the nations leading developer and builder of student housing, and now manages the program company wide overseeing each construction teams execution of the work in accordance with the CPM schedule. He is responsible for reporting directly to executive management on the status of each project under construction.



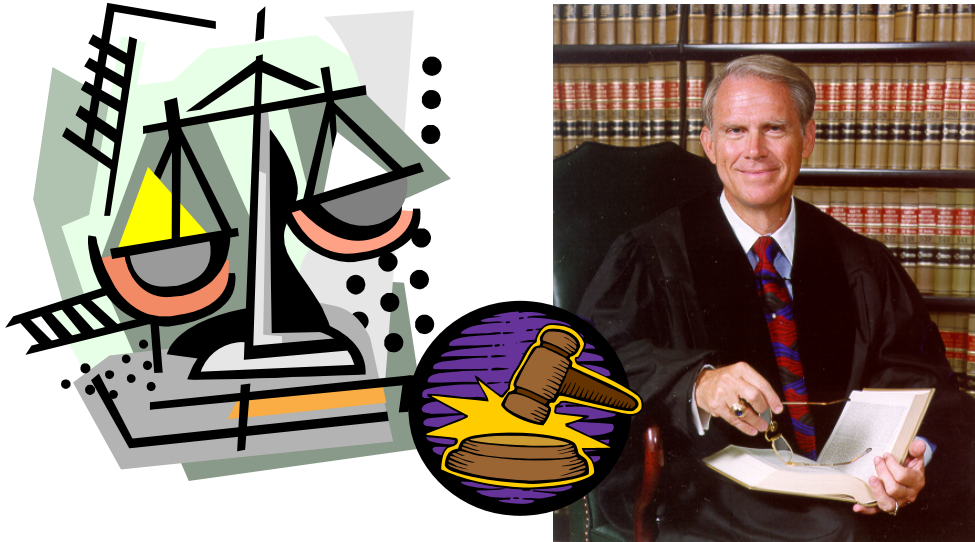
Jeffrey also has extensive experience working on a wide variety of construction projects including Heavy Civil, Commercial, Health Care, Industrial, Waste Water Treatment, Education, and Federal / Local Government public works projects for agencies such as USACE, NAVAC, GSA, DOD, & LAUSD as a Regional Manager of Planning & Scheduling at Brasfield & Gorrie, and Scheduling Manager for Suffolk Constructions West Coast Region.

Jeffrey's past experience also includes teaching Planning & Scheduling, Estimating, and Construction Management classes at Wentworth Institute of Technology in Boston, MA as an adjunct professor.

Jeffrey currently sits as Chair of the AACE Planning and Scheduling Subcommittee, A position he has been elected to, by its members, since 2015

By Fred

Decision Time



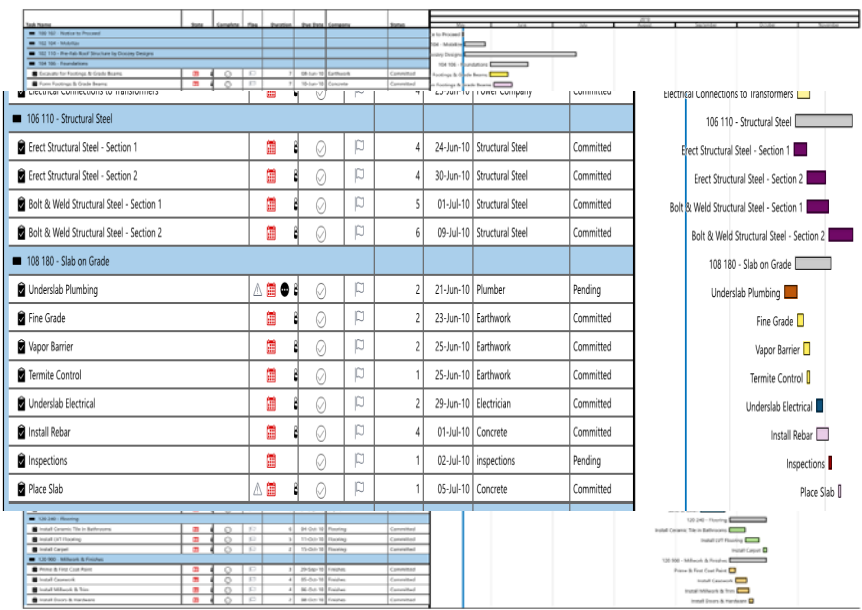
Text by Judge Marshall

Task Name	Rate	Complete	Flag	Duration	Due Date	Category	Status
#102 102 - Visitor to Process							
#102 104 - Mailbox							
#102 103 - Flat Roof Structure by Onsey Design							
#102 103 - Roofline							
#102 103 - Footings & Grade Beams							
#102 103 - Form Footings & Grade Beams							
#102 103 - Install Rebar for Footings & Grade Beams							
#102 103 - Inspections							
#102 103 - Pour Footings & Grade Beams							
#104 105 - LOTS Utilities							
#104 105 - Storm Drain Piping							
#104 105 - Electrical Footcords							
#104 105 - Storm Piping							
#104 105 - Gas Line							
#104 105 - Set Transformers							
#104 105 - Gas Main Tie-In							
#104 105 - Electrical Connections to Transformers							
#106 109 - Structural Steel							
#106 109 - Steel Structural Steel - Section 1							
#106 109 - Steel Structural Steel - Section 2							
#106 109 - Bolt & Weld Structural Steel - Section 1							
#106 109 - Bolt & Weld Structural Steel - Section 2							
#108 100 - Sdk on Grade							
#108 100 - Underlaid Plumbing							
#108 100 - Fire Grade							
#108 100 - Vapor Barrier							
#108 100 - Temple Control							
#108 100 - Underlaid Electrical							
#108 100 - Install Rebar							
#108 100 - Inspections							
#108 100 - Pour Slab							
#109 103 - Exterior Curtain Wall							
#109 103 - Install Ext. Curtain Wall Framing							
#109 103 - Install Exterior Curtain Wall Cladding							
#109 103 - Install Exterior Curtain Wall System							
#109 103 - Check Exterior Curtain Wall System							
#109 103 - Under Seal Exterior Framing							
#110 100 - Hg/Sec Flat Roof Structure							
#110 100 - Steel 104 - Interior Metal Studs							
#110 100 - Top Truss							
#110 100 - Frame Purlins, Walls, & Soffits							
#110 100 - Frame Walls, Ceilings, & Soffits							
#110 100 - Drywall							
#110 100 - Hanging Drywall							
#110 100 - Corner Board, Trim, & Bed							
#110 100 - First Coat Mud							
#110 100 - 2nd Coat Mud							
#110 100 - 3rd Coat Mud							
#110 100 - Sand & Clear							
#120 240 - Flooring							
#120 240 - Install Ceramic Tile in Bathrooms							
#120 240 - Install LVT Flooring							
#120 240 - Install Carpet							
#120 900 - Millwork & Finish							
#120 900 - Prime & First Coat Paint							
#120 900 - Install Casework							
#120 900 - Install Millwork & Trim							
#120 900 - Install Doors & Hardware							

[illegible]

Include for draft review by Jeff and Martha, and Dan for cross of Jeff

Contractor Lean Pull Plan - Baseline



Direct testimony by Jeff led by Martha

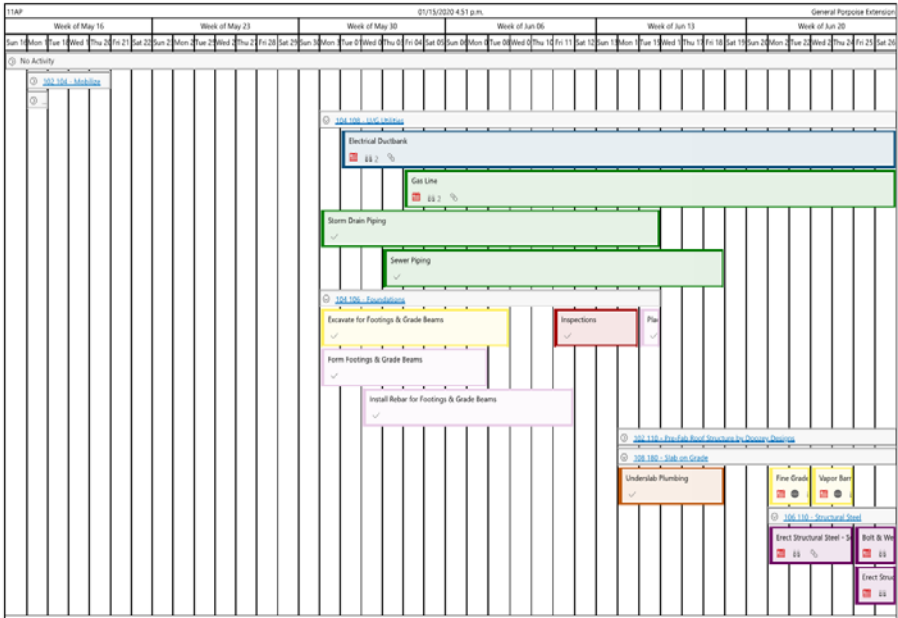
Contractor Lean Pull Plan

Update 1 – 21Jun10

[illegible]

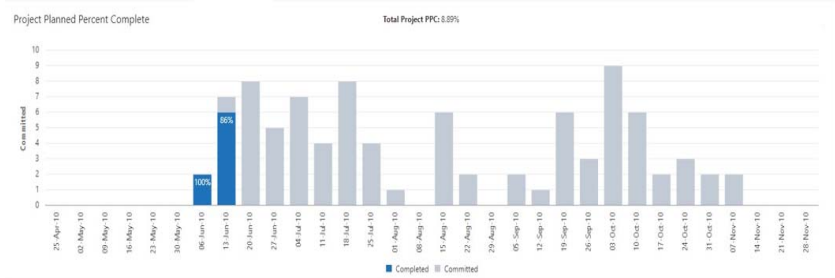
Direct testimony by Jeff led by Martha

Contractor Weekly Work Plan Update 1 – 21Jun10

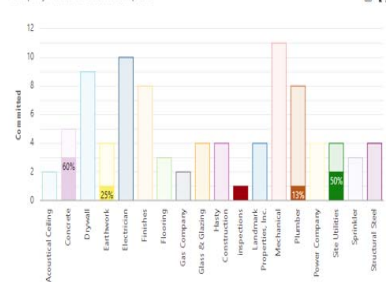


Direct testimony by Jeff led by Martha

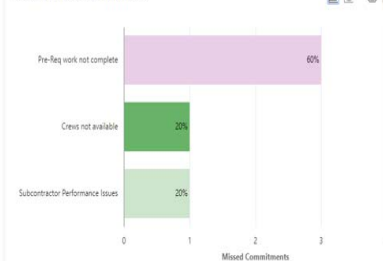
Contractors Commitments Analysis Update 1 – 21Jun10



Company Planned Percent Complete



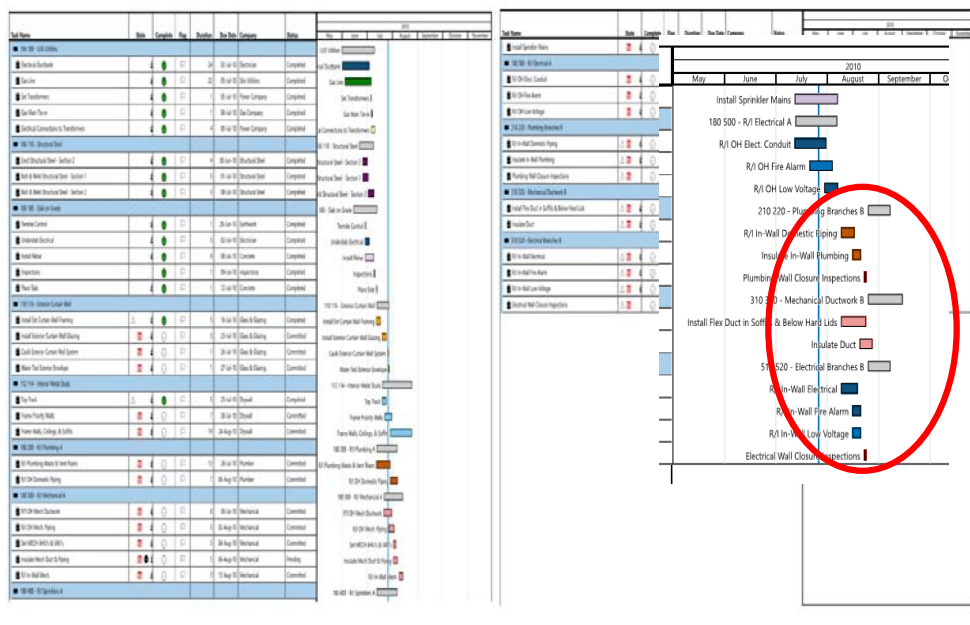
Reasons for Missed Commitments



Direct testimony by Jeff led by Martha

Contractor Lean Pull Plan

Update 2 – 26Jul10



Direct testimony by Jeff led by Martha

The figure consists of two Gantt charts, labeled 'a)' and 'b)', showing project schedules. Each chart has a timeline from Week 0 to Week 10. The tasks and their durations are as follows:

Chart a) Tasks:

- Task 1: Design (Week 0-2, Duration 2)
- Task 2: Development (Week 2-4, Duration 2)
- Task 3: Testing (Week 4-6, Duration 2)
- Task 4: Deployment (Week 6-8, Duration 2)
- Task 5: Maintenance (Week 8-10, Duration 2)

Chart b) Tasks:

- Task 6: Design (Week 0-2, Duration 2)
- Task 7: Development (Week 2-4, Duration 2)
- Task 8: Testing (Week 4-6, Duration 2)
- Task 9: Deployment (Week 6-8, Duration 2)
- Task 10: Maintenance (Week 8-10, Duration 2)

53

Project Planned Percent Complete

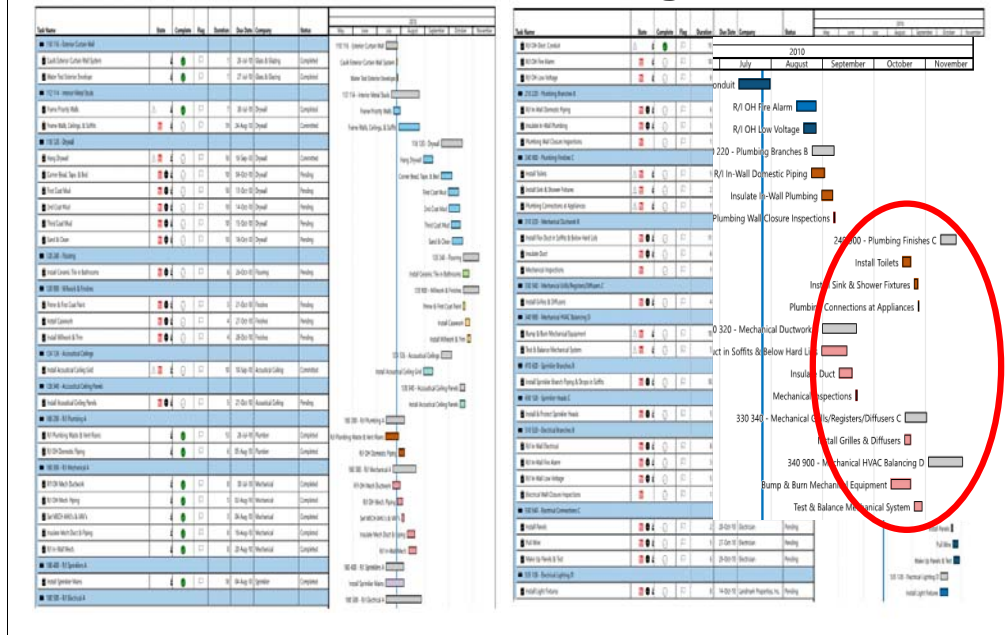
Total Project PPG: 21.74%

Week	Completed (%)	Committed (%)
25-Apr-10	0	0
02-May-10	0	0
09-May-10	0	0
16-May-10	0	0
23-May-10	0	0
30-May-10	0	0
06-Jun-10	100%	0
13-Jun-10	61%	0
20-Jun-10	30%	70%
27-Jun-10	71%	0
04-Jul-10	75%	0
11-Jul-10	40%	0
18-Jul-10	11%	0
25-Jul-10	0	100%
01-Aug-10	0	88%
08-Aug-10	0	21%
15-Aug-10	0	60%
22-Aug-10	0	29%
29-Aug-10	0	10%
05-Sep-10	0	20%
12-Sep-10	0	10%
19-Sep-10	0	60%
26-Sep-10	0	29%
03-Oct-10	0	88%
10-Oct-10	0	60%
17-Oct-10	0	21%
24-Oct-10	0	29%
31-Oct-10	0	20%
07-Nov-10	0	20%
14-Nov-10	0	0
21-Nov-10	0	0
28-Nov-10	0	0

Legend: Completed (Blue), Committed (Gray)



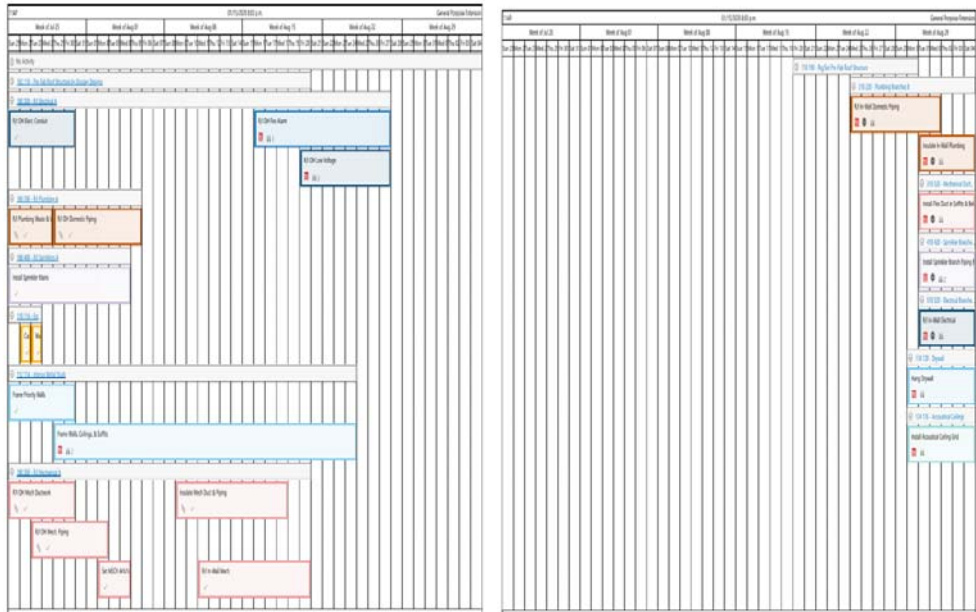
Contractor Lean Pull Plan Update 3 – 23Aug10



Direct testimony by Jeff led by Martha

Contractor Weekly Work Plan

Update 3 – 23Aug10



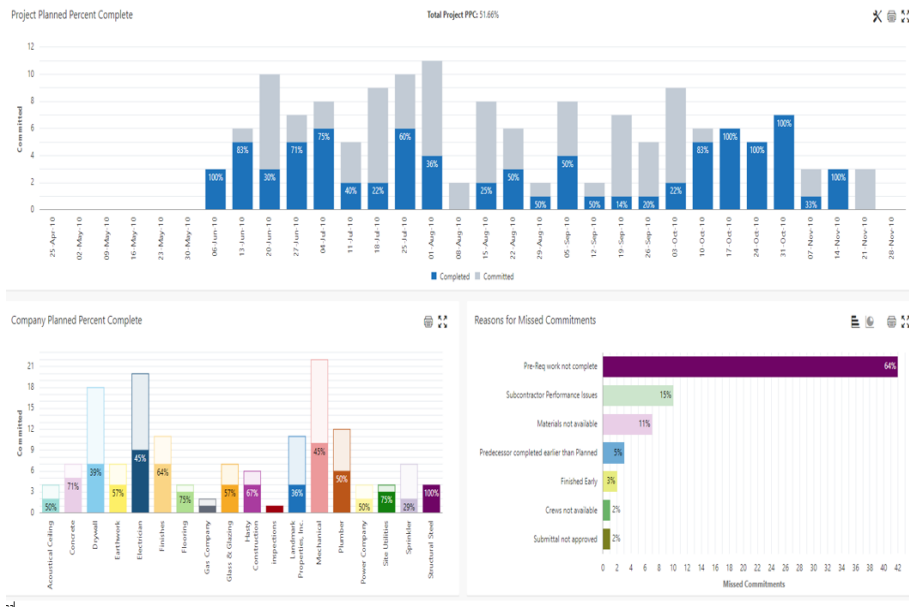
Direct testimony by Jeff led by Martha

Contractors Commitments Analysis Update 3 – 23Aug10



Direct testimony by Jeff led by Martha

Contractors Commitments Analysis Update 4 – 19Nov10



Direct testimony by Jeff led by Martha

Cross- Examination



Dan shows off cross examination technique on Jeff's testimony

Closing Arguments



Three minutes each please



John will have lots of fun

Questions?

- **Hon. John M. Marshall**
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 - 214-361-1107
- **Daniel Lund III, Esq. – Phelps Dunbar LLP**
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- **Martha Y. Curtis, Esq. – Sher Garner Cahill Richter Klein & Hilbert, LLC.**
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- **Jeffrey Milo, PSP**
 - Jeff.Milo@LandmarkProperties.com
 - 706-543-1910
- **Fredric L. Plotnick, P.E., Esq.**
 - fplotnick@fplotnick.com
 - 215-885-3733

Fred as Moderator