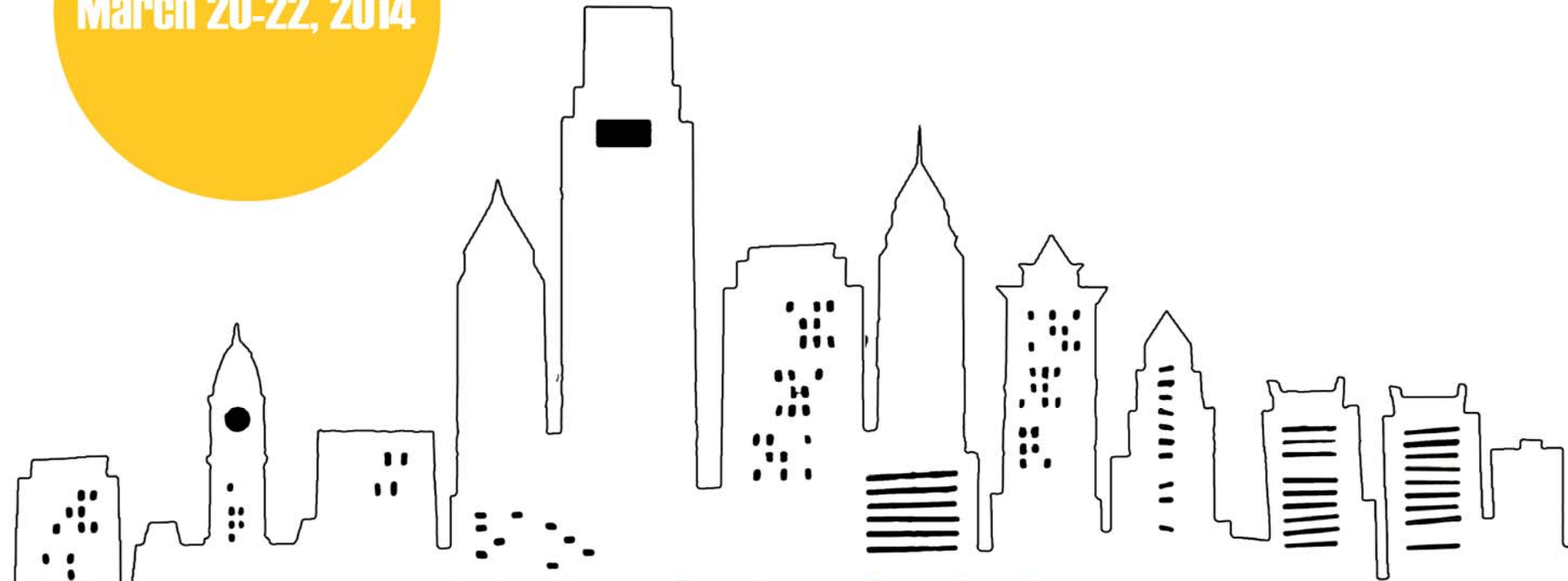


March 20-22, 2014

We are NOT going to have any claims on this project
Presented by Fredric L Plotnick PhD Esq PE



TCM with Brotherly Love

First Annual Northeast Total Cost Management Symposium

Embassy Suites 9000 Bartram Avenue, Philadelphia, PA



FROM **VISION**
TO **REALITY**

PRIMAVERA
23rd ANNUAL CONFERENCE

We are **NOT**
going to have any claims on this project



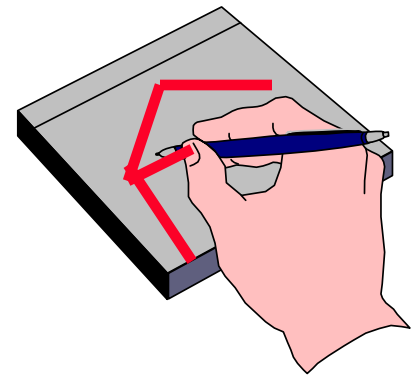
Presented by Fredric L. Plotnick, Ph.D., Esq., P.E.
fplotnick@fplotnick.com 215-885-3733



PRIMAVERA®

Updated for AACEi 21MAR14

Today's Discussion



- ◆ How to think like a Judge in reviewing construction documents and actions
- ◆ How to avoid disputes with proper planning in the CPM and in the pre-construction meeting
- ◆ How to prepare the CPM network to mitigate the impact of unavoidable disputes
- ◆ How to read, review, and comment on a CPM submittal by others
- ◆ How to update the CPM network to document past and avoid future delays
- ◆ How to deal with Questions & Changes in the field and in the CPM



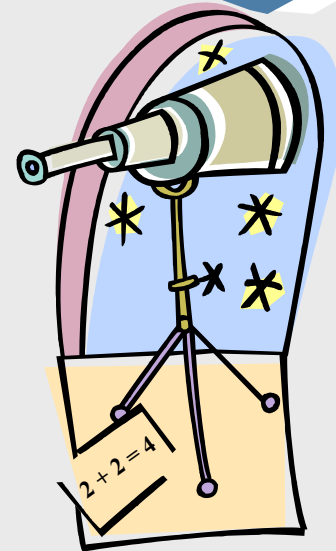
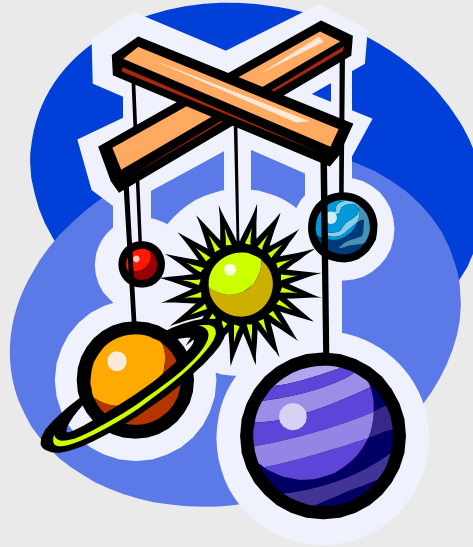
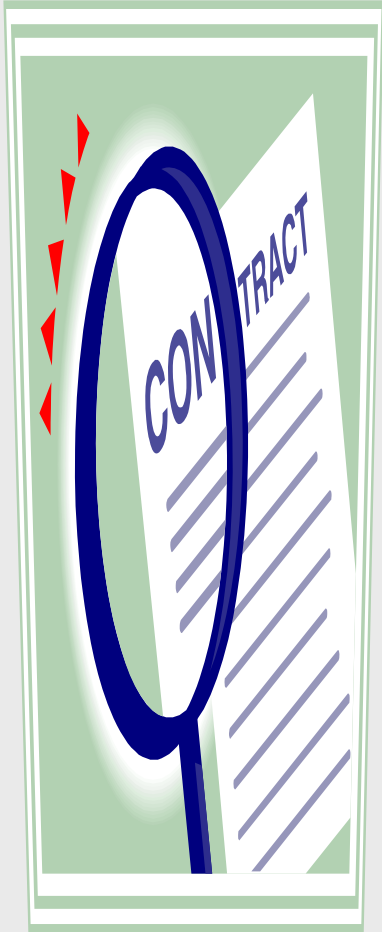
How to think like a judge

- ◆ English Common Law
 - ◆ Majesty of the Courts is not to be mocked
- ◆ We are enforcing the contract ... because
 - ◆ Benefits inhabitants of the realm
 - ◆ “Good Faith” required of both sides
 - ◆ Wrongful contract language corrected
 - ◆ Wrongful contract language removed
 - ◆ Wrongful contract language punished



Contracts do not change truths

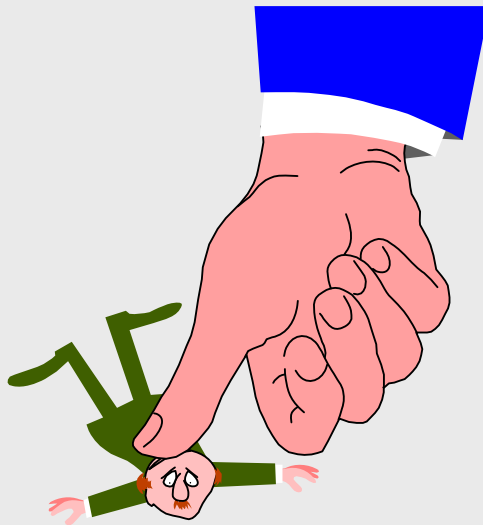
- ◆ Arcane rules that skew results may not be enforceable
- ◆ Galileo v Copernicus and the Ptolemaic system





Attempts to Assign Responsibility

- ◆ Contractual assignment of obligations vs.
- ◆ Judicial assignment of obligations
 - ◆ Responsibility linked to authority to perform
 - ◆ the *Spearin* doctrine

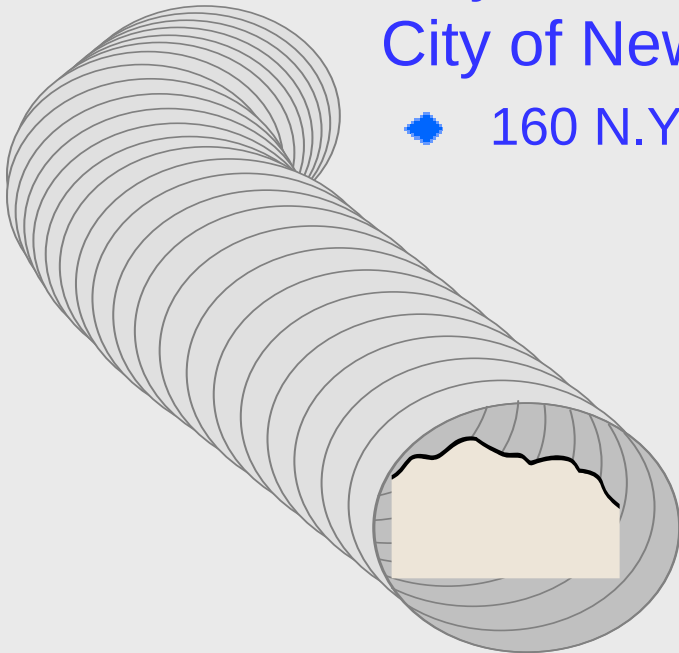


vs.

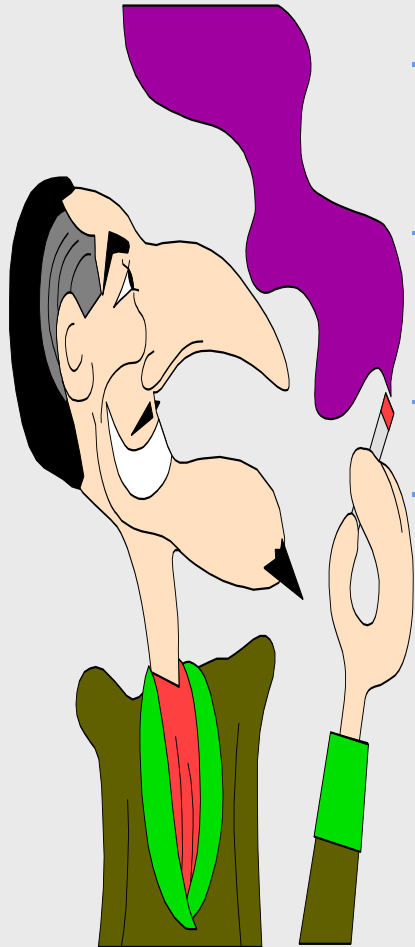


The Spearin Doctrine

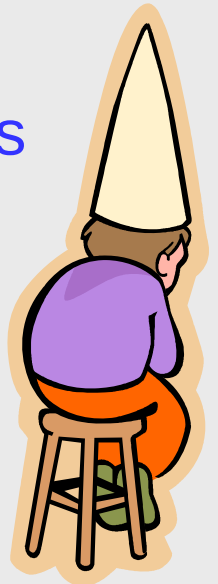
- ◆ United States v. Spearin (1918)
 - ◆ 248 US 132, 63 L Ed 166, 39 S Ct 59
- ◆ MacKnight Flintic Stone Company v. Mayor, Alderman and Commonalty of the City of New York
 - ◆ 160 N.Y. 73, 54 N.E. 661, (1899)



Liquidated Damages & Penalties



- ◆ “Good Faith” – “Bad Faith”
 - ◆ both parties must desire contractor to succeed
- ◆ the appearance that one party will benefit more if the other fails may trigger sanctions
- ◆ L/D’s as contractor’s best friend
- ◆ Majority Rule – no L/D’s **AND** no actuals



Rules for L/D's

- ◆ Legal Foundation
 - ◆ Difficulty or impossibility to measure actual damages
 - ◆ if breach causes any damages
 - ◆ Reasonableness of stipulated damages
 - ◆ based on knowledge when contract prepared
- ◆ May split damages into two (or more) classes
 - ◆ Actual damages where measurement possible
 - ◆ e.g. inspectors, interest, rent
 - ◆ Stipulated where measurement difficult
 - ◆ e.g. lost business, value to public
- ◆ This is an Engineering Calculation
 - ◆ base L/D's upon values subject to adverse review
 - ◆ e.g. business plan to bank, funding study to agency

Specification v Engineering



Words v Actions

- ◆ CPM clarifies and modifies the contract between parties



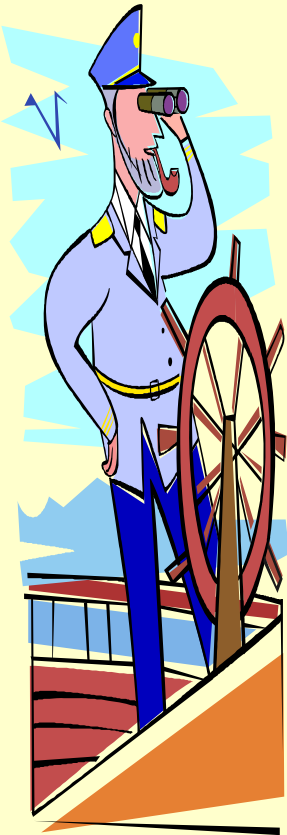
What do stakeholders want of the scheduler?



- ◆ Lookout?
- ◆ Fortune Teller?
- ◆ Cooker of Books?

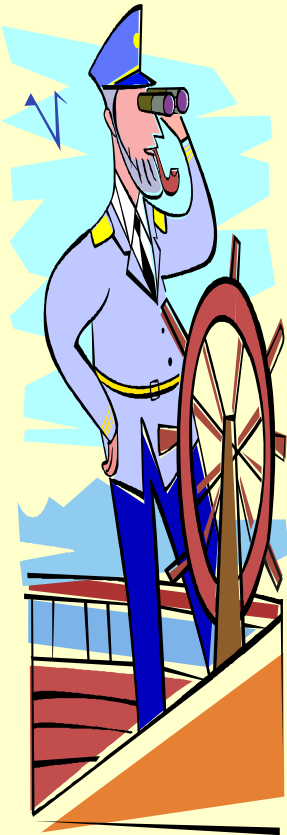


You are what you make of the job



- ◆ Set your own course
- ◆ Professionalism
- ◆ Assist the P.M.
to make the project succeed
- ◆ Assist the Owner
to make the project succeed
- ◆ Honor the engineering
- ◆ Honor the contract
- ◆ Honor the **full** contract
- ◆ Maintain credibility

You are what you make of the job



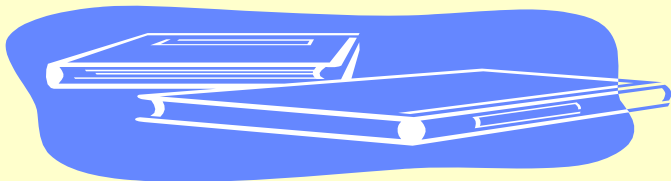
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- ◆ Honor the engineering
- ◆ Honor the contract
- ◆ Honor the **full** contract
- ◆ Maintain credibility
- ◆ the initial CPM
- ◆ rejections and approvals
- ◆ updates v revisions
- ◆ update schedule v cost
- ◆ run the job by the schedule





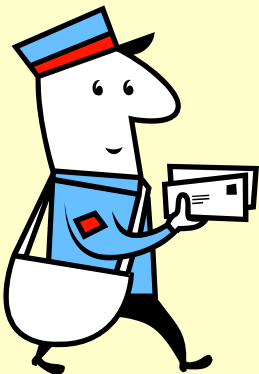
Stick to your guns

- ◆ The initial CPM represents a model of the contractor's "initial plan of execution"
- ◆ Is the "plan of execution" rejected? – see the P.M.
- ◆ Is the "model" rejected? – are reasons valid?
 - ◆ do fix technical and valid complaints
 - ◆ do **NOT** "fix" invalid complaints – do ask for clarification
 - ◆ do **NOT** add new knowledge of project as clock is ticking
- ◆ If no agreement on YOUR corrected submittal
 - ◆ clone the schedule – submit their way and your way



Notice

- ◆ Notice to Surety of Contractor
- ◆ Notice to E&O Carrier of Engineer
- ◆ Notice to Legal Dept of Owner
- ◆ Notice to AG of Governmental Owner





The specification gives the engineer the right and **obligation** to review and approve or reject.



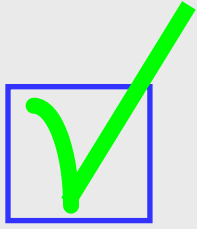
“I don’t care what your calculations say, that beam looks too thin – it’s rejected.”

Activity	Description	Days	2018
START MILESTONE		0	
CLEAR SITE		3	
SURVEY AND LAYOUT		2	
POUR GRADE		3	
DRILL WELL		15	
WATER TANK FOUNDATIONS		4	
EXCAVATE FOR SEWER		10	
EXCAVATE ELECTRIC		1	
OVERHEAD POLE LINE		6	
INSTALL ELECTRICAL		6	
ERECT WATER TANK		10	
INSTALL SEWER AND		5	
TANK PIPING & VALVES		10	
INSTALL WELL PUMP		3	
INSTALL ELECTRICAL DUCT		3	
UNDERGROUND WATER PIPING		8	
PULL WIREFOR		5	
CONNECT WATER PIPING		3	
BUILDING LAYOUT		1	
DRIVE AND POUR PILES		10	
EXCAVATE FOR OFFICE		3	
EXCAVATE PLANT		5	
POUR PILE CAPS P-W		5	
FORM AND POUR GRADE BEAMS P-W		10	

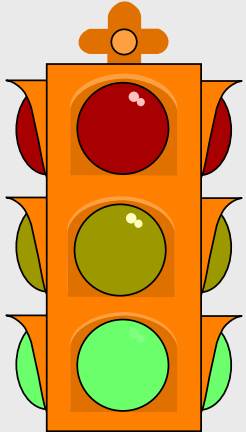
Looking Good is Not Enough



- ◆ “I don’t care what your calculations say, Missie, that beam looks strong enough – it’s accepted.”



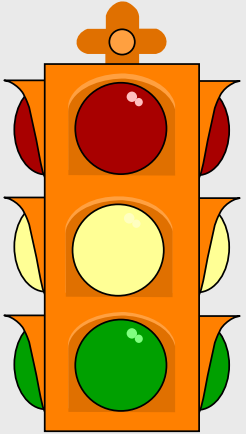
Acceptance—Limitations



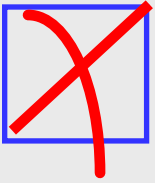
- ◆ Format
- ◆ Owner-controlled activities
- ◆ Logic connections to Owner activities
- ◆ Logic connections between “Primes”



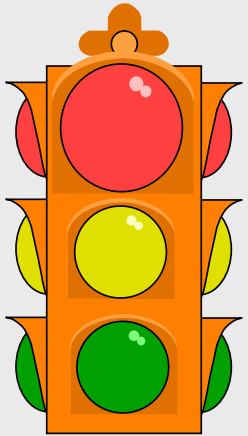
Acceptance—Limitations



- ◆ Reserve owner rights
 - ◆ Contractor responsible for own "means and methods"
 - ◆ Reasonable additional resources for reasonable delays
 - ◆ Exercise of SNET constraints



Rejection—Exercising Authority



- ◆ Rejecting a format
- ◆ Rejecting a duration
- ◆ Rejecting or adding a logic connector
- ◆ Rejecting calculated output but not input



What is a proper format?

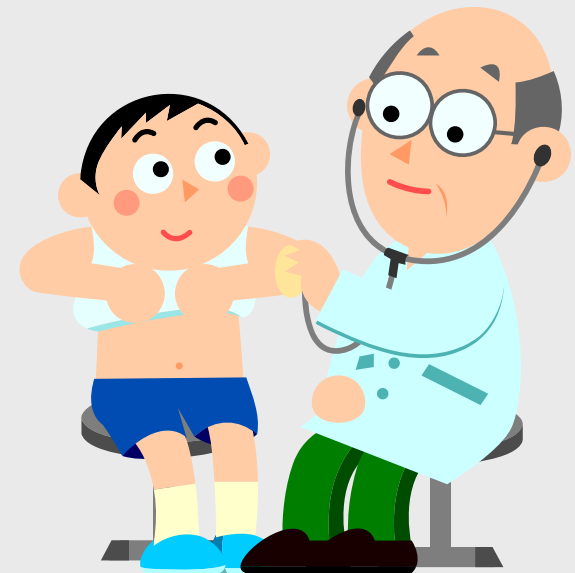
- ◆ **Meets the requirements of the contract specification**
 - ◆ Construed against party that wrote the specification
- ◆ Is this a CPM – or merely a bar-chart by CPM software?
- ◆ Check the Input for function – Note the Output for form
- ◆ Activities – Logic – Durations – Miscellaneous



First Step

Reviewing the Diagnostic

- ◆ P3 Diagnostic
- ◆ Expanded P3 Diagnostic for descriptions
- ◆ Expanded P3 Diagnostic for PDM
- ◆ P6 Diagnostic
- ◆ Deltek Acumen Diagnostics
- ◆ Schedule Analyzer Diagnostics
- ◆ DCMA / GAO Metrics
- ◆ Pertmaster RDCPM® Diagnostics
- ◆ Custom Diagnostics



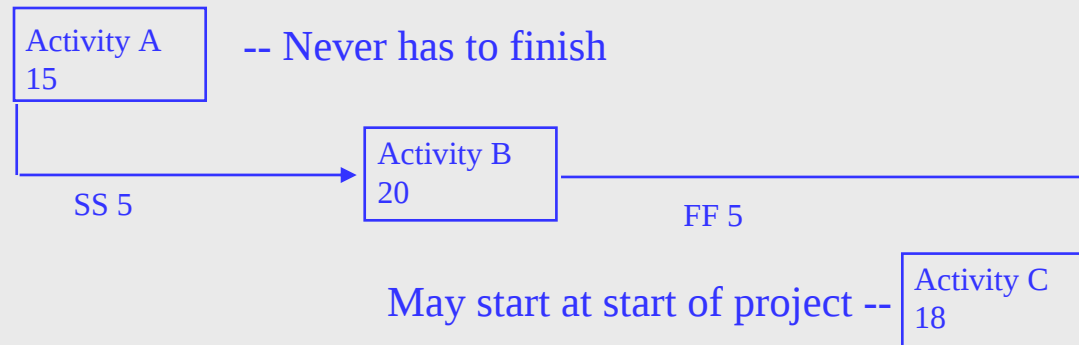
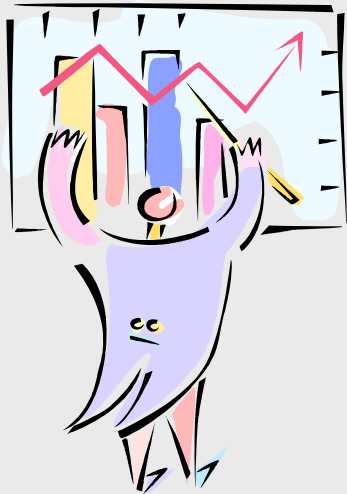
CPM is Based Upon Logic

- ◆ Hard physical logic vs. soft resource logic
 - ◆ Each activity must have at least one physical restraint as a predecessor
 - ◆ Each activity must have at least one physical restraint as a successor
 - ◆ Each activity should have not more than one resource restraint per resource
- ◆ Should your specification require designation of restraints as physically or resource driven?

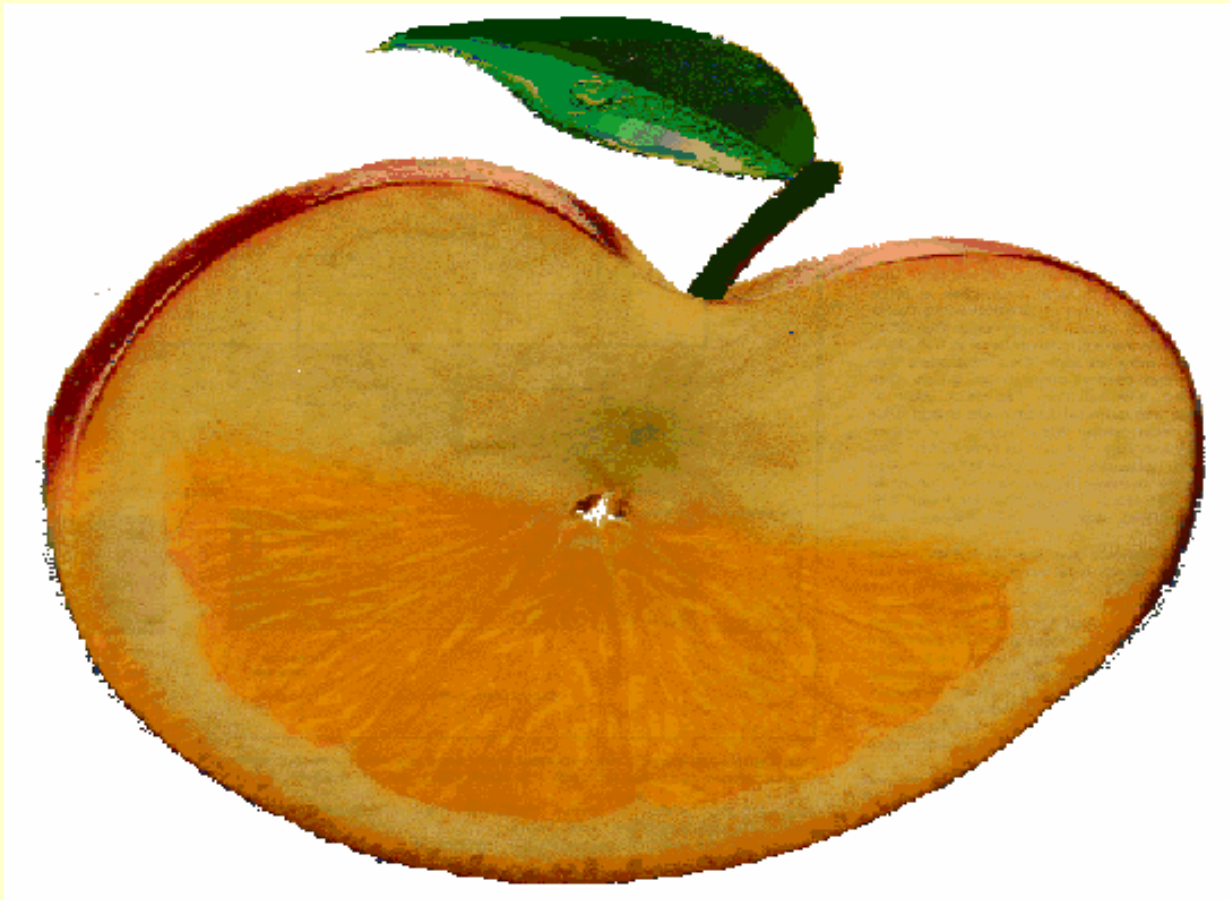


Use of non-traditional relationships and lags

- ◆ Each activity must be preceded by a FS or SS link
- ◆ Each activity must be succeeded by a FS or FF link



Updating the Schedule vs. Revising the Network

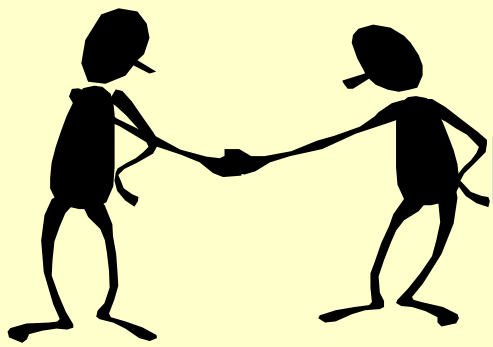




Updating the Schedule vs. Revising the Network

- ◆ **schedule updates relate progress/performance this past period**
 - ◆ includes AS, AF, RD, PCT, CostPCT
 - ◆ AS & AF relate to schedule - not cost - can next task start?
 - ◆ RD relates to estimate of work remaining - not when scheduled
 - ◆ special problems when PCT $\neq$ CostPCT
 - ◆ special problems when updating activities out-of-sequence
 - ◆ special problems for PDM Lead/Lag updating
- ◆ **network revisions relate improved knowledge of future of project**
 - ◆ includes adding/modifying/deleting activities
 - ◆ includes adding/modifying/deleting logic restraints
 - ◆ includes adding/modifying/deleting constraints
 - ◆ includes changing durations of activities not-yet-started





Review the Input of Updates

◆ Walk-thru by Super & Resident Engineer

Activity ID	Activity Description	Orig Dur	Rem Dur	Cal ID	Early Start	Early Finish	Total Float	Actual Start	Rem Dur	% Comp	Actual Finish	2004											
												JUN			JUL			AUG			SEP		
												31,7	14,21	28,5	12,19	26,2	9,16	23,30	6,13	20,2			
2206	Construct Beaver Rd - Subbase	1	1	1	15JUN04	15JUN04	150		1	0		2204*	2208*	2210*									
												Construct Beaver Rd - Subbase											
2210	Construct Beaver Rd - Curbs	4	4	1	16JUN04	21JUN04	150		4	0		2206*	2212*										
												Construct Beaver Rd - Curbs											
2208	Construct Beaver Rd - U-Drain	1	1	1	16JUN04	16JUN04	153		1	0		2206*	2212										
												Construct Beaver Rd - U-Drain											
2212	Construct Beaver Rd - Paving	2	2	1	22JUN04	23JUN04	150		2	0		208, 2210*	2216*										
												Construct Beaver Rd - Paving											
2216	Construct Beaver Rd - Driveways & Misc.	2	2	1	24JUN04	25JUN04	150		2	0		12*, H2200*	508										
												Construct Beaver Rd - Driveways & Misc.											

Pour Fdn

Pour Wall

Erect Joists

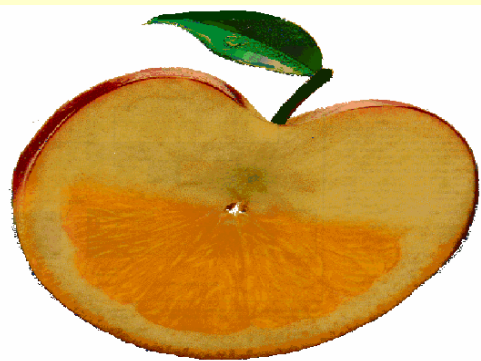
Prefab Rebar

Rubdown Wall

Actual Start and Finish Dates

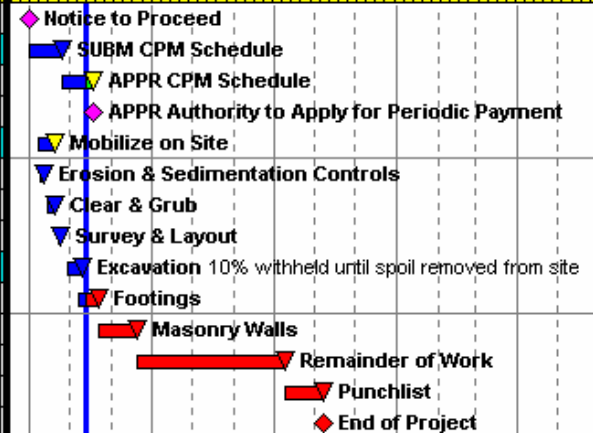
- ◆ Activity starts after predecessors complete
- ◆ Off-site and on-site fabrication and preparation is not part of activity
- ◆ Activity is finished when successor activity may begin
- ◆ Touch-up and repair not required for successor is not part of activity





Updating Schedule v Cost

Activity ID	Activity Description	Orig Dur	Rem Dur	%	R/C %	Early Start	Early Finish	Budgeted Cost	Earned value	2002												2003				
										M	A	M	J	J	A	S	O	N	D	J	F	M	A	M		
1000	Notice to Proceed	0	0	100		01APR02A		0.00	0.00	 Notice to Proceed																
S01310	SUBM CPM Schedule	20	0	100	0	01APR02A	25APR02A	10,000.00	0.00	 SUBM CPM Schedule																
A01310	APPR CPM Schedule	15	5	67		26APR02A	17MAY02	0.00	0.00	 APPR CPM Schedule																
A01025	APPR Authority to Apply for Periodic Payment	0	0	0			17MAY02	0.00	0.00	 APPR Authority to Apply for Periodic Payment																
1010	Mobilize on Site	10	0	100	80	08APR02A		20,000.00	16,000.00	 Mobilize on Site																
1020	Erosion & Sedimentation Controls	2	0	100		09APR02A	11APR02A	5,000.00	5,000.00	 Erosion & Sedimentation Controls																
1025	Clear & Grub	5	0	100		15APR02A	19APR02A	7,000.00	7,000.00	 Clear & Grub																
1030	Survey & Layout	2	0	100		22APR02A	23APR02A	0.00	0.00	 Survey & Layout																
1035	Excavation	10	0	100	90	29APR02A	10MAY02A	30,000.00	27,000.00	 Excavation 10% withheld until spoil removed from site																
1040	Footings	10	8	20		08MAY02A	22MAY02	40,000.00	8,000.00	 Footings																
1050	Masonry Walls	20	20	0		23MAY02	19JUN02	60,000.00	0.00	 Masonry Walls																
1060	Remainder of Work	80	80	0		20JUN02	09OCT02	650,000.00	0.00	 Remainder of Work																
9990	Punchlist	20	20	0		10OCT02	06NOV02	0.00	0.00	 Punchlist																
9995	End of Project	0	0	0			06NOV02	0.00	0.00	 End of Project																



Cost	
Resource	
Cost Acct/Category	
Driving	☐
Curve	
Budgeted cost	30000.00
Actual this period	27000.00
Actual to date	27000.00
Percent expended	90.0
Percent complete	90.0
Earned value	27000.00
Cost to complete	3000.00
At completion	30000.00
Variance	0.00



- [illegible]

Tough Love vs. Benign Neglect



- ◆ Harmful unilateral actions
are usually a result of lack of information
- ◆ Educate other party of cost of impact
- ◆ Educate other party of cost of avoidance
- ◆ Knowledge of risk encourages reassessment
- ◆ Tough stance up front mitigates bad contract language
 - ◆ *Example:* directing owner to terminate other prime “for cause”

Example

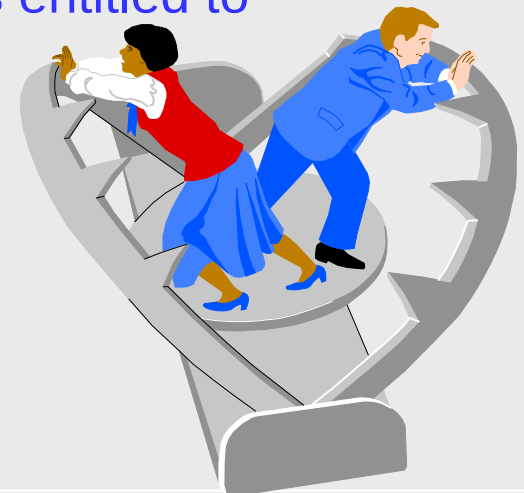
Refusal to Proceed Without Written CO



Nether Providence Township School Authority v. Thomas M. Durkin & Sons, Inc. 505 Pa. 42, 476 A.2nd 904 (1984)

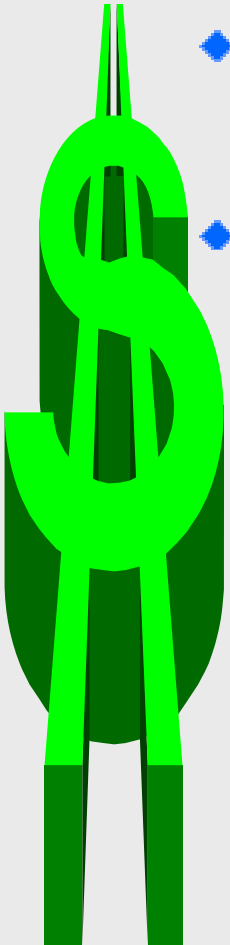
Dick Corporation v. State Public School Building Authority 27 Pa. Commw. 498, 501, 365 A.2nd 663, 665 (1976)

“The contractor, by refusing to perform, took the only logical action available to him and he is entitled to recover any damages suffered by him as a result of the Authority’s delay in providing the written authorization.”



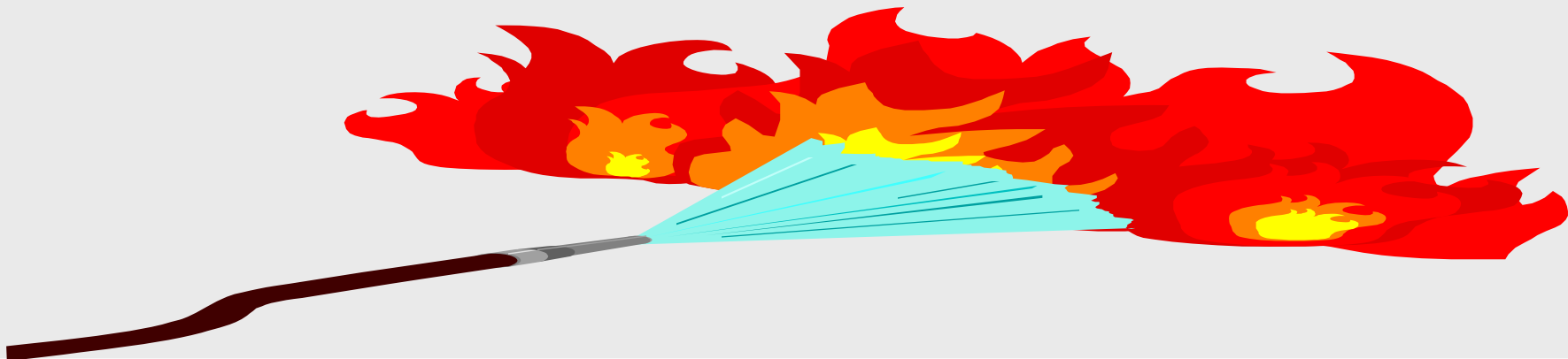
Agree to Disagree, But Minimize Mutual Costs

- ◆ Detail of CPM preparation will disclose items of disagreement
 - ◆ Stipulate details of agreement and limit details of disagreement
 - ◆ Opportunity to fairly negotiate details of disagreement
- ◆ Agree on procedures to minimize costs of disagreement
 - ◆ T&M procedures should be discussed at Pre-Construction meeting
 - ◆ T&M procedures to be used on work to be performed in 3 months
 - ◆ Quick, cheap referral of this dispute to neutral referee before work performed



How to treat Requests For Information

- ◆ Reference each RFI to drawing number, specification *and CPM activity*
 - ◆ Notice of impact of RFI should be given ASAP
 - ◆ Entry of RFI to Expedition
- ◆ Add to CPM (*as a revision*) if
 - ◆ actual impact (work stops now) or
 - ◆ danger of impact if response reqd before next update

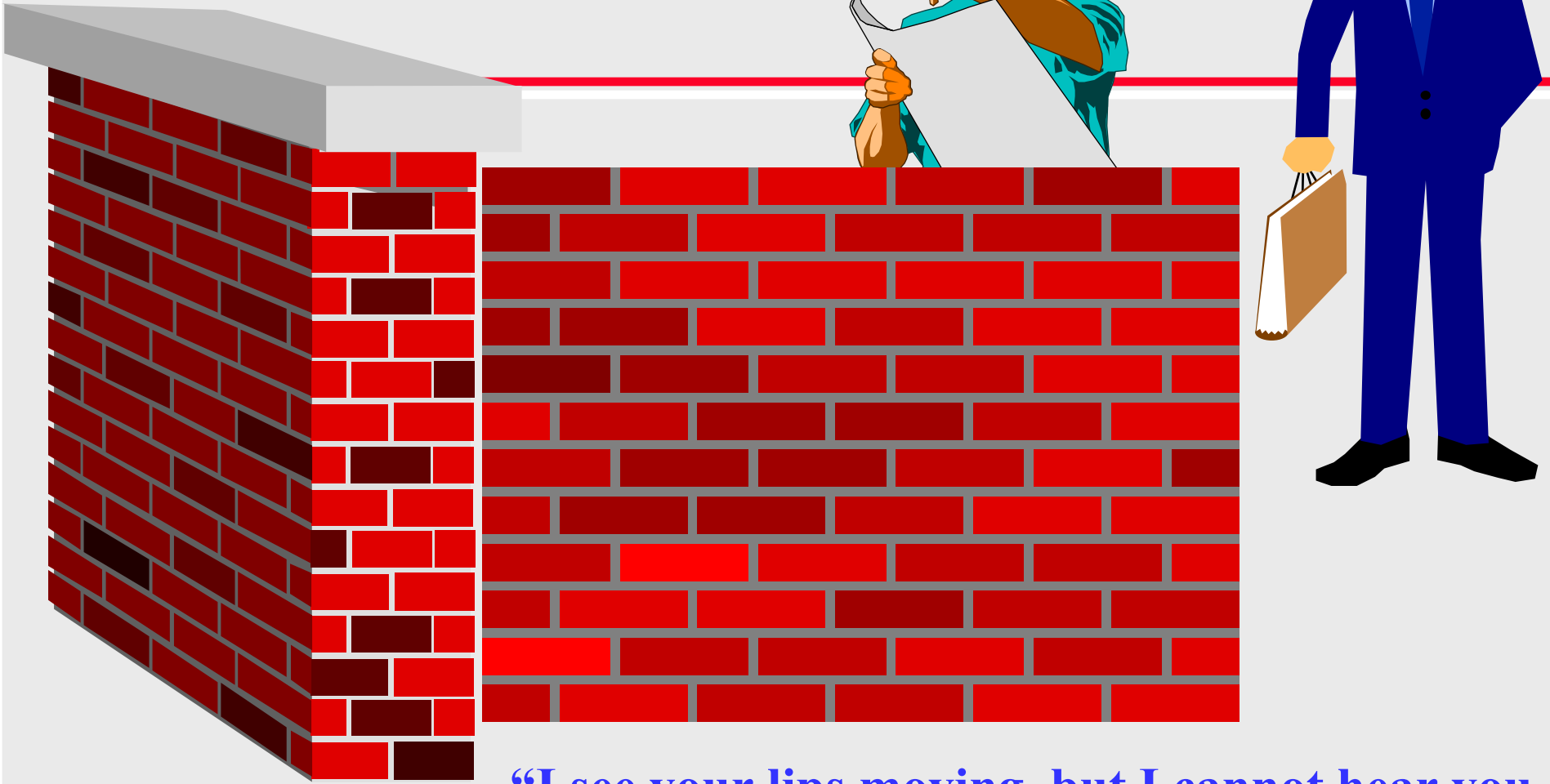


How to treat Proposed Change Orders

- ◆ Each PCO must generate a query for a stop work change order
 - ◆ Owner has obligation to direct contractor's response to PCO
 - ◆ Continue to incur cost preparing to perform base plan? - or -
 - ◆ Stop preparations and incur delay or disruption if PCO not adopted?
 - ◆ Never, never start preparations or work on PCO until CO signed, and ...

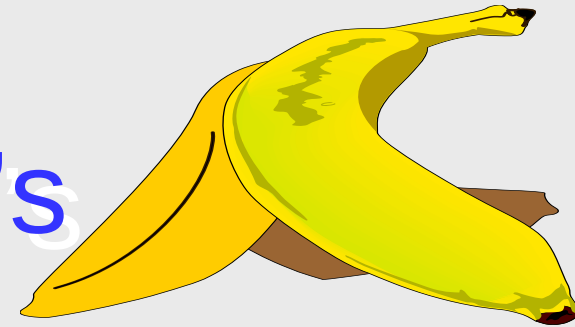


- Never, never stop work on base contract until CO signed ...



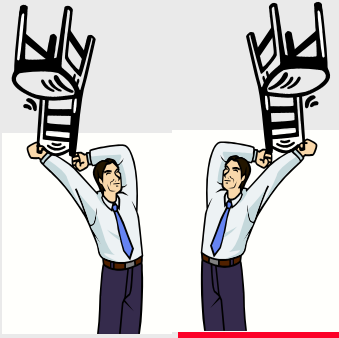
“I see your lips moving, but I cannot hear you until you put that Change Order in writing!”

How to treat PCO's



- ◆ Reference PCO to CPM in PCO estimate
 - PCO estimate should include:
 - ◆ Request for extension of time and cost therefore
 - ◆ Cost for wasted preparation incurred
 - ◆ Cost for disruption to other activities
 - ◆ Reservation for additional disruption cost if concurrent PCOs
 - ◆ Cost for preparation of PCO estimate(s) x adjustment factor
 - ◆ Cost for modifying the CPM
- ◆ Remember — until a CO is signed, it is only talk — honor the contract!

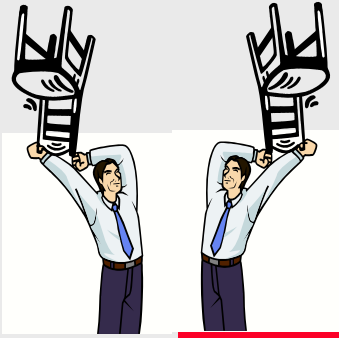




PCO Estimate v Quote

- ◆ Estimate = Honest Pricing
- ◆ Contingency v Risk
- ◆ OH&P Contract limit only applies to T&M
- ◆ Distinguish Field Overheads v Field Direct Costs

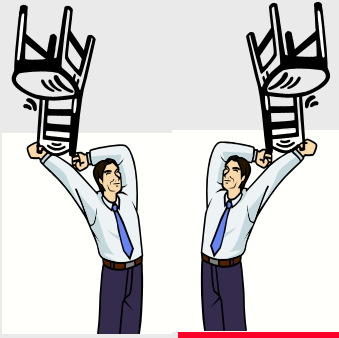




PCO Estimate v Quote

- ◆ Estimate = Honest Pricing
- ◆ Standard of Care = Good Faith
- ◆ Estimate of Risk per Component
- ◆ Estimate of Risk of E&O
- ◆ Estimate of Risk = Contingency
- ◆ Note Contractual OH&P
- ◆ Distinguish Overheads
 - ◆ obligation by contract
 - ◆ union rule or custom
 - ◆ additional support by company



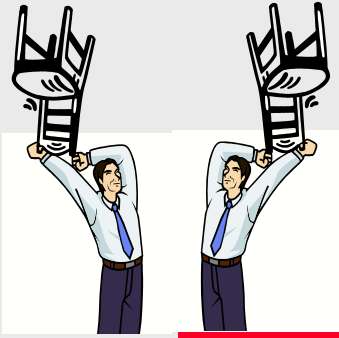


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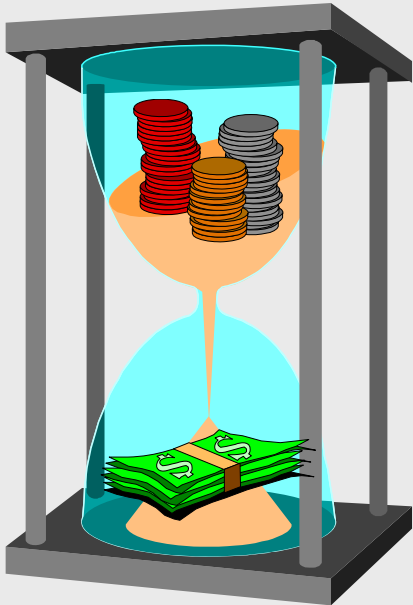
- ◆ Estimate = Honest Pricing
- ◆ Standard of Care = Good Faith
- ◆ Estimate of Risk per Component
- ◆ Estimate of Risk of E&O
- ◆ Estimate of Risk = Contingency
- ◆ Note Contractual OH&P
- ◆ Distinguish Overheads
 - ◆ obligation by contract
 - ◆ union rule or custom
 - ◆ additional support by company
- ◆ Quote = Price + Risk + Advantage
- ◆ Will you price everything? NO
- ◆ Contingency v Risk
- ◆ How much would Lloyd's charge?
- ◆ 30%+ is not uncommon
- ◆ OH's may be greater than 100%
- ◆ Common Law limit to CO exposure
- ◆ Don't bid against yourself
- ◆ Requote request? +\$10,000
- ◆ \$\$\$ or +\$10k or T&M or ...

- ◆ OH&P Contract limit only applies to T&M



How to Treat Change Orders

- ◆ Each CO must be made part of the CPM
 - ◆ If CO agreed to — change in work to be provided
 - ◆ If CO disputed — change in contractor's bid plan
- ◆ Knowledge of impact on project important—
regardless of who pays
 - ◆ Need to track all costs as if T&M CO
 - ◆ Owner notice and opportunity to track T&M
 - ◆ T&M tracking creates costs to contractor
 - ◆ T&M tracking creates costs to owner
 - ◆ Resolution of dispute reduces costs



Natkin & Company v. George A. Fuller Company 347 F.Supp 17 (1972)



"All parties agreed that the contract documents provided that a Critical Path Method of scheduling would be followed throughout the job.

Defendants expressly conceded ...that 'The CPM was not continually up-dated throughout the job'

[W]e became convinced that the defendants, at the insistence of [the owner], abandoned the Critical Path Method required by the contract documents for their own purposes. ...

We became convinced that [the owner] ... in effect elected to assume control of the contract and the job in order to meet the commitments it had made to its own Occupancy Division."
ibid. at p. 20

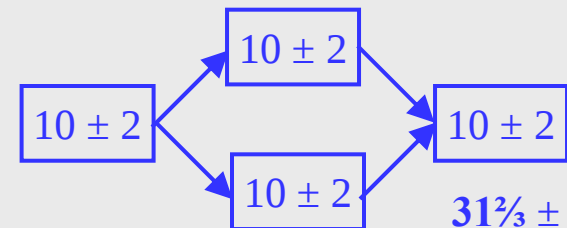




Tell the Truth— Even when Ordered to Lie

- ◆ “Increase CPM durations to use all contract time allotted”

$$\begin{array}{r} 10 \pm 2 \\ 10 \pm 2 \\ 10 \pm 2 \\ 10 \pm 2 \\ \hline 40 \pm \end{array}$$





Tell the Truth— Even when Ordered to Lie

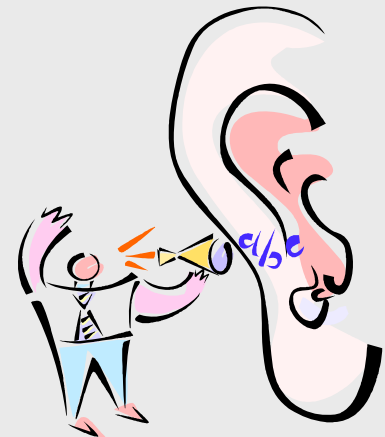
- ◆ The engineer has specified honest estimates of activity durations and the relationships between them be given
 - ◆ if the calculated schedule completion is too late, the contractor is expected to increase resources or hours per week to reduce its duration and **NOT** merely to reduce durations arbitrarily
 - ◆ if the calculated schedule completion is too early, is the engineer demanding the contractor reduce its manning, or work 4 day weeks

or to lie?
- ◆ **Project Float belongs to the contractor**
 - ◆ Courts will not enforce an absurd contract provision

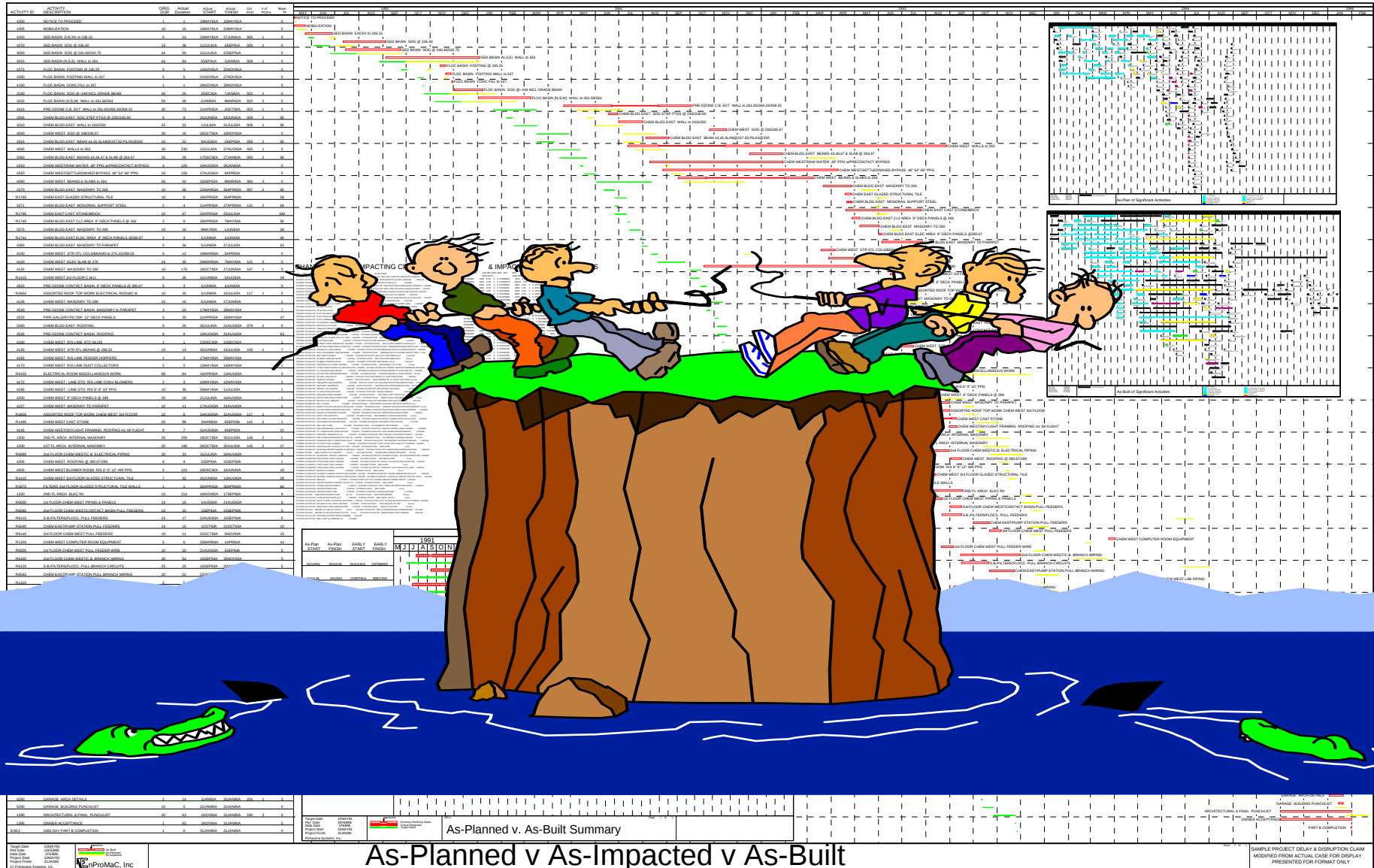


Tell the Truth— Even when Ordered to Lie

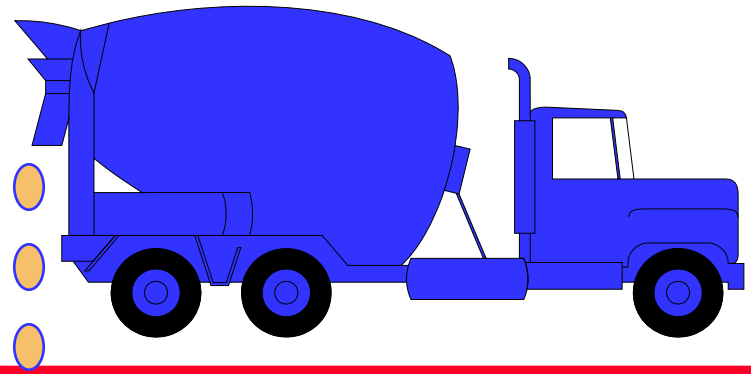
- ◆ “Increase CPM durations to use all contract time allotted”
- ◆ “Delete that note”
- ◆ “Contractor is directed to perform at no additional cost to owner”
- ◆ “Contractor is directed to perform without an extension of time”
- ◆ “Contractor is directed to perform with extension to be determined”



Claims represent money lost forever



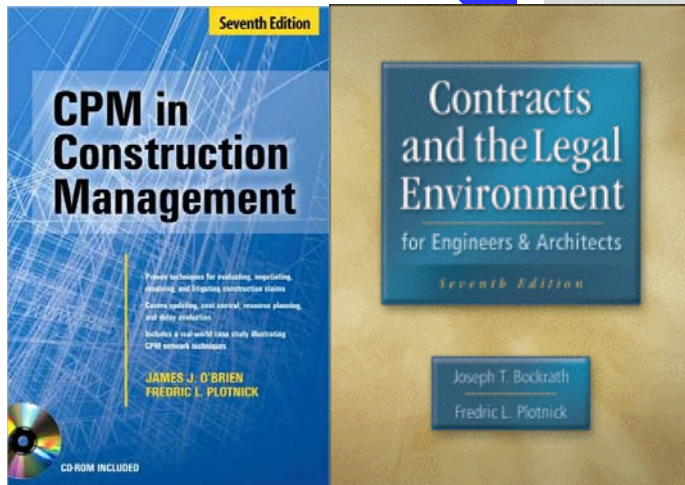
Summary



- ◆ Up-front planning mitigates delays and claims
- ◆ Right to review imposes an obligation
- ◆ Document events and transfers of information
- ◆ Honor the contract: Demand written directives
- ◆ Prepare always for litigation — so to avoid
- ◆ Avoidable costs result in litigation
- ◆ Proper planning mitigates avoidable cost



Questions?



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