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MAKING the DIFFERENCE

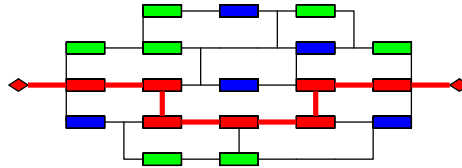
Schedules: Back to Basics

- I. **CPM Scheduling Basics**
- II. **The Baseline Schedule**
- III. **The Schedule Update**
- IV. **Delay Analysis**
- V. **Proving and Tracking Damages**

I. CPM Schedule Basics



- A. CPM Schedule Logic
- B. The Critical Path
- C. Float



3

A. "The Basics" - What is a Schedule?



- A schedule is a **TOOL** used primarily to manage time and resources.
- A schedule will force the Party(s) to **PLAN** the construction sequence and timing.
- The schedule provides a means of **TRACKING** progress and forecasting project completion.
- The schedule also provides a method of **MEASURING** the effect of unplanned events.

4

A. "The Basics" - Terms and Components



- **Activity** – A readily defined element of work
- **Activity Number** – The identification number of the activity
- **Duration** – The number of work days required to accomplish the activity
- **Logic** – The sequential interrelationship of activities

5

A. "The Basics" - Types of Schedules



GANTT or Bar Chart is a graphic representation of the time frame certain activities are planned to be performed relevant to other activities.


With a bar chart, the logical relationship between activities and criticality of activities is implied.

CPM (Critical Path Method) is a network of activities with defined durations interconnected by logical work sequences.

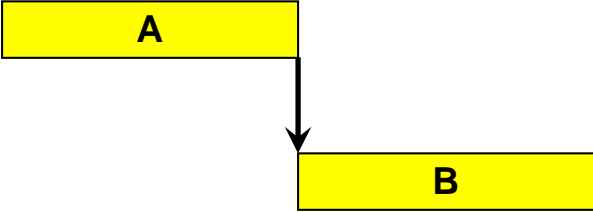
From a defined start date, a CPM schedule can calculate start and finish dates for activities and determine the longest or critical path through the logic network.

6

A. CPM Schedule Logic




Finish-To-Start (FS) relationship reflects that the activity A must Finish before activity B Starts

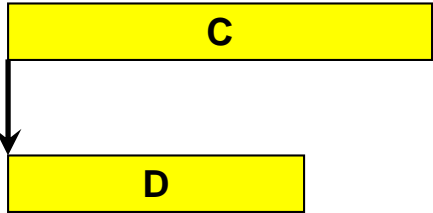


7

A. CPM Schedule Logic



Start-To-Start (SS) relationship reflects that activity D can Start when activity C Starts

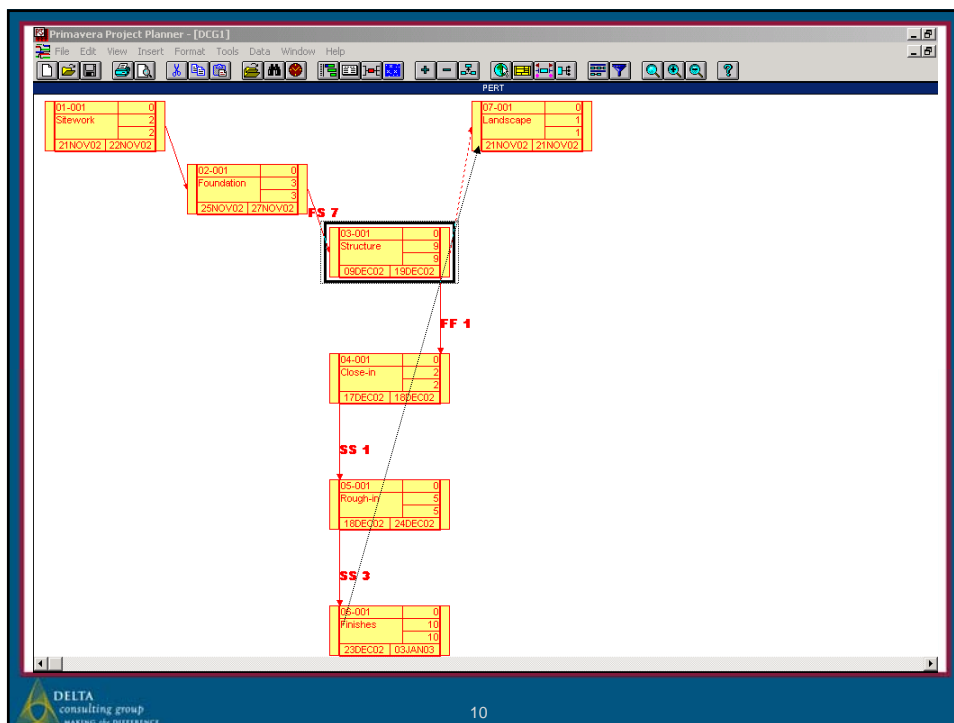
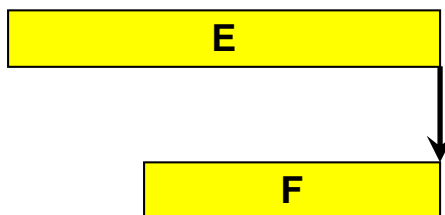


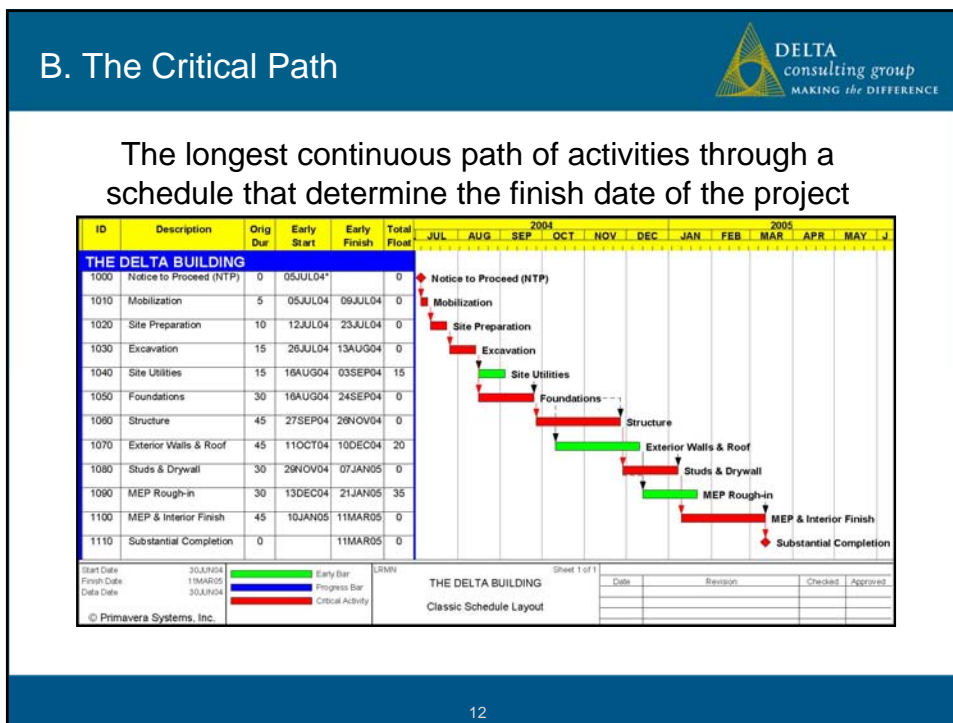
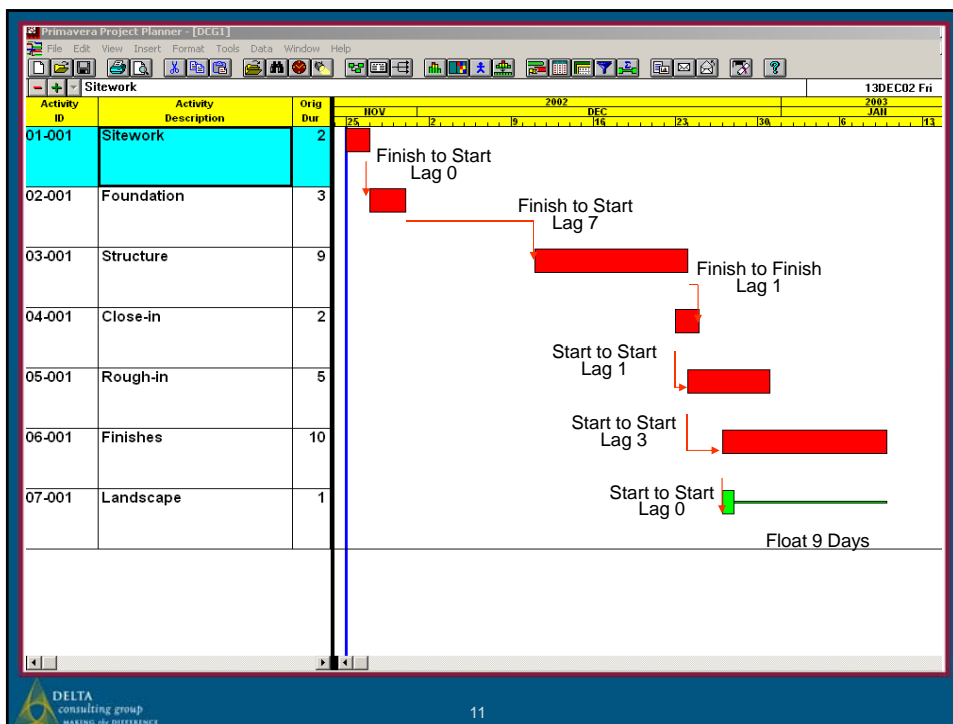
8

A. CPM Schedule Logic



Finish-To-Finish (FF) relationship reflects that activity E must Finish before activity F can Finish

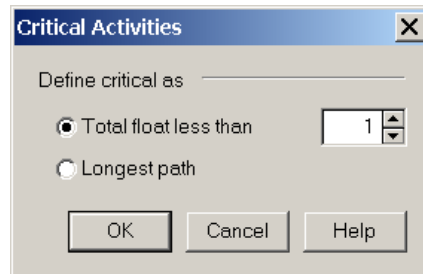




B. The Critical Path



The most popular software can be set to show activities as critical by Total Float or by Longest Path



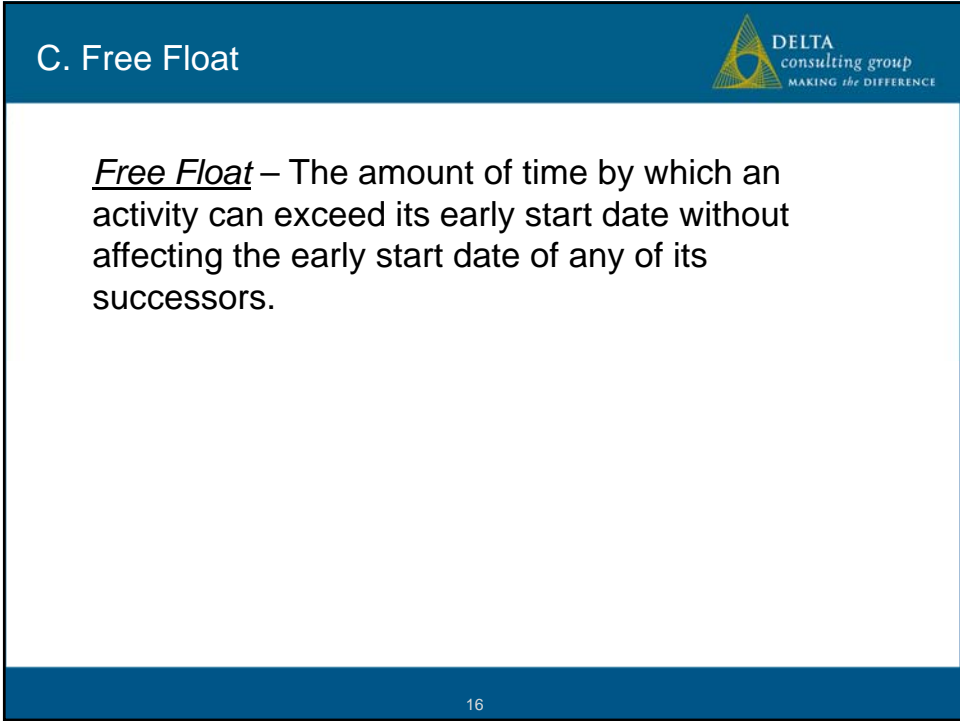
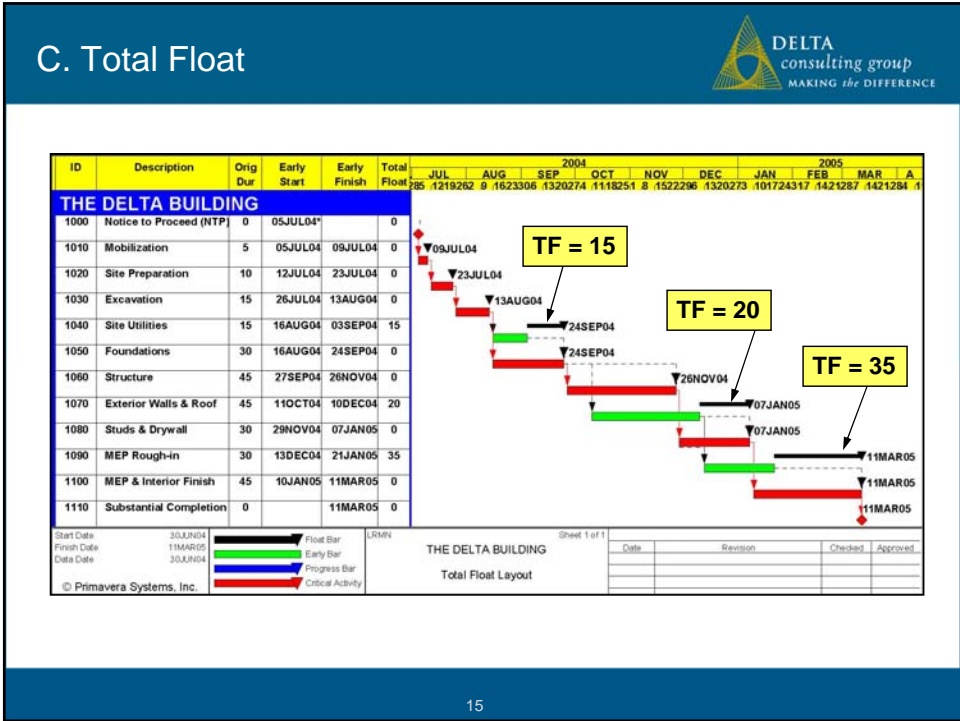
13

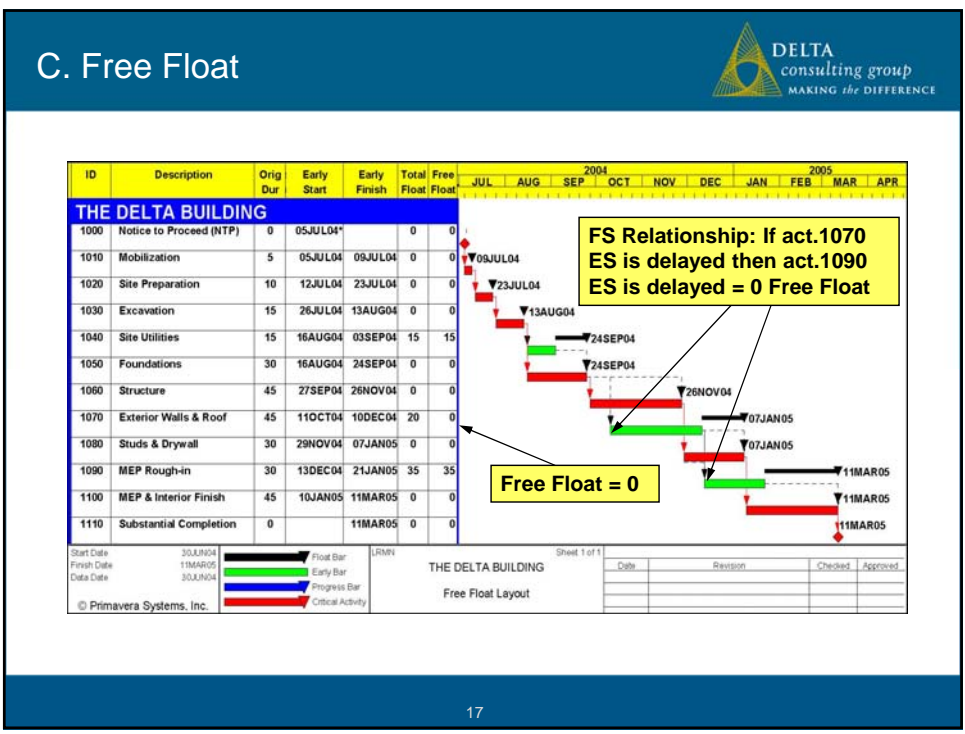
C. Total Float



Total Float – The amount of time an activity can exceed its early finish date without affecting the project end date or other imposed dates. Mathematically, it is the difference between the early finish and late finish dates on an activity.

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Schedules: Back to Basics

- I. CPM Scheduling Basics
- II. **The Baseline Schedule**
- III. The Schedule Update
- IV. Delay Analysis
- V. Proving and Tracking Damages

II. The Baseline Schedule



- A. Problems with Activities
- B. Problems with Logic
- C. Problems with Time and Resources
- D. Criteria for Reviewing the Baseline Schedule

“If you can’t measure it, you can’t manage it!”

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A. Problems with Activities




1. Durations: Too Short or Too Long
2. Number of Activities: Too Few or Too Many
3. Owner-Controlled Activities
4. Designer Controlled Activities
5. Procurement and Long Lead Items
6. NTP, Substantial and Final Completion
7. Project Close-out

20

A. Problems with Activities

Durations Too Short - Too Many Activities




- Too much time creating the baseline.
- Too much time to update so the schedule integrity suffers.
- Schedule does not function well as a resource management tool.
- Can cause excessive meetings for the updates.
- Micro schedules are very useful and informative in the right superintendents hands.

Best Practice: Average Duration of 10-20 Days


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A. Problems with Activities

Durations Too Short – Too Many Activities




ID	Description	Orig Dur	Early Start	Early Finish
THE DELTA BUILDING				
Project Level				
1120	PROJECT	180*	05JUL04	11MAR05
Level 2a				
1000	Notice to Proceed (NTP)	0	05JUL04	
1010	Mobilization	5	05JUL04	09JUL04
1020	Site Preparation	10	12JUL04	23JUL04
1030	Excavation	15	26JUL04	13AUG04
1040	Site Utilities	15	18AUG04	03SEP04
Micro Level for Area A, B, C, D, E, F, and G				
1050	Foundations - Area A	30	18AUG04	24SEP04
1051	Lot is Clear for Foundation Installation	0	18AUG04	
1061	Mob the Excavation Crew	2	18AUG04	17AUG04
1071	Mob the Excavation Equipment	2	18AUG04	17AUG04
1081	Begin Foundation	0	18AUG04	
1091	Excavate Foundation	5	18AUG04	24AUG04
1101	Clean up Foundation and Footings for Forms	1	25AUG04	25AUG04
1111	Puttle Pour Deep Footings	1	25AUG04	25AUG04
1121	Form Footings and Foundation	7	25AUG04	02SEP04
1131	Add Rebar in Footings and Foundation	7	27AUG04	06SEP04
1141	Install Sleeves and Anchor Bolts	1	06SEP04	06SEP04
1151	Inspection of Forms and Rebar Steel	1	07SEP04	07SEP04
1161	Pour Footings	2	08SEP04	09SEP04
1171	Pour Foundation	4	10SEP04	15SEP04
1181	Cure Time for Footings and Foundation	3	16SEP04	20SEP04
1191	Strip Forms from Foundation	2	21SEP04	23SEP04
1201	Backfill Foundation	3	21SEP04	23SEP04
1211	Compact Foundation Backfill	2	22SEP04	23SEP04
1221	Test Foundation Compaction/Backfill	1	24SEP04	24SEP04
1231	Complete Foundation	0	24SEP04	
Level 2b				
1060	Structure	45	27SEP04	20NOV04
1070	Exterior Walls & Roof	45	11OCT04	10DEC04
1080	Studs & Drywall	30	29NOV04	07JAN05
1090	MEP Rough-in	30	13DEC04	21JAN05
1100	MEP & Interior Finish	45	19JAN05	11MAR05
1110	Substantial Completion	0	11MAR05	



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A. Problems with Activities

Durations Too Long - Too Few Activities




- Little or no time has been spent thinking through the construction process or project procedures.
- No importance placed on updates so the schedule integrity suffers.
- Schedule does not function well as a resource management tool.
- Can cause excessive claims and delays.
- High level schedules are very useful and informative in the right owners hands.

Best Practice: Enough Activities to Manage

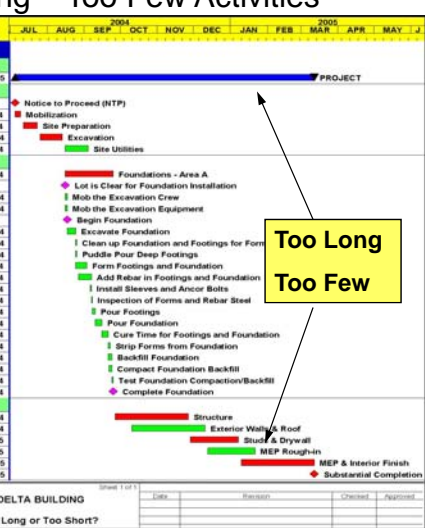



A. Problems with Activities

Durations Too Long – Too Few Activities



ID	Description	Orig Dur	Early Start	Early Finish
THE DELTA BUILDING				
Project Level				
1120	PROJECT	180*	05JUL04	11MAR05
Level 2a				
1000	Notice to Proceed (NTP)	0	05JUL04*	
1010	Mobilization	5	05JUL04	09JUL04
1020	Site Preparation	10	12JUL04	23JUL04
1030	Excavation	15	26JUL04	10AUG04
1040	Site Utilities	15	16AUG04	03SEP04
Micro Level for Area A, B, C, D, E, F, and G				
1050	Foundations - Area A	30	16AUG04	24SEP04
1061	Lot is Clear for Foundation Installation	0	16AUG04*	
1061	Mob the Excavation Crew	2	16AUG04	17AUG04
1071	Mob the Excavation Equipment	2	16AUG04	17AUG04
1081	Begin Foundation	0	16AUG04	
1091	Excavate Foundation	5	16AUG04	24AUG04
1101	Clean up Foundation and Footings for Forms	1	25AUG04	25AUG04
1111	Puddle Pour Deep Footings	1	25AUG04	25AUG04
1121	Form Footings and Foundation	7	25AUG04	02SEP04
1131	Add Rebar in Footings and Foundation	7	27AUG04	06SEP04
1141	Install Sleeves and Ancor Bolts	1	06SEP04	06SEP04
1151	Inspection of Forms and Rebar Steel	1	07SEP04	07SEP04
1161	Pour Footings	2	08SEP04	09SEP04
1171	Pour Foundation	4	10SEP04	15SEP04
1181	Cure Time for Footings and Foundation	3	16SEP04	20SEP04
1191	Strip Forms from Foundation	2	21SEP04	23SEP04
1201	Backfill Foundation	3	21SEP04	23SEP04
1211	Compact Foundation Backfill	2	22SEP04	23SEP04
1221	Test Foundation Compaction/Backfill	1	24SEP04	24SEP04
1231	Complete Foundation	0	24SEP04	
Level 2b				
1060	Structure	45	27SEP04	26NOV04
1070	Exterior Walls & Roof	45	11OCT04	10DEC04
1080	Studs & Drywall	30	30NOV04	07JAN05
1090	MEP Rough-in	30	13DEC04	21JAN05
1100	MEP & Interior Finish	45	10JAN05	11MAR05
1110	Substantial Completion	0		11MAR05





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B. Problems with Logic

1. Open Starts and Open Ends
2. Scheduling Loops
3. Leads and Lags
4. Critical and Sub-Critical Paths
5. Float: Sequestered?
6. Date Constraints and Milestones

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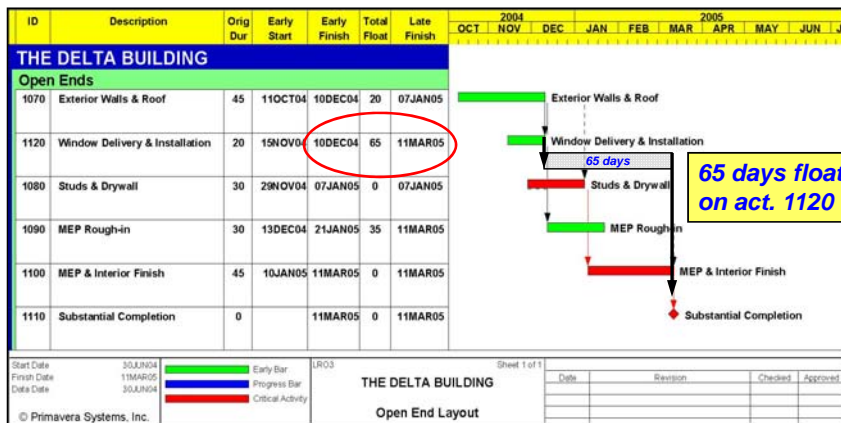
B. Problems with Logic: Open Starts

ID	Description	Orig Dur	Early Start	Early Finish	Total Float
THE DELTA BUILDING					
Open Ends					
1070	Exterior Walls & Roof	45	11OCT04	10DEC04	20
1120	Window Delivery & Installation	20	10SEP04	07OCT04	36
1080	Studs & Drywall	30	29NOV04	07JAN05	0
1090	MEP Rough-in	30	13DEC04	21JAN05	35
1100	MEP & Interior Finish	45	10JAN05	11MAR05	0
1110	Substantial Completion	0		11MAR05	0

Activity 1120 has no predecessor total float calculation is questionable.

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B. Problems with Logic: Open Ends

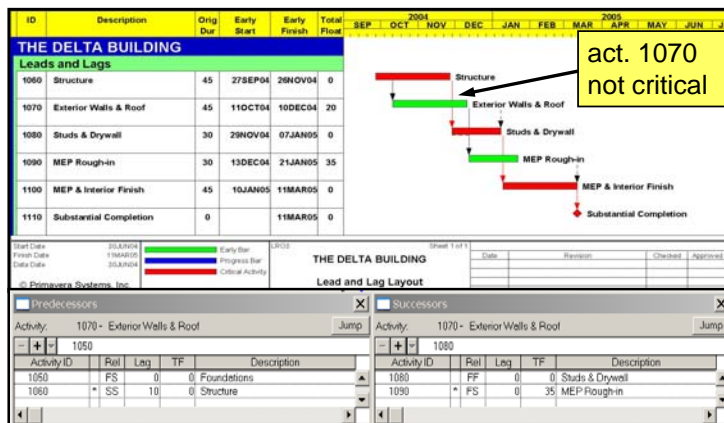


Activity 1120 has no successor which creates total float to the end of the project.

B. Problems with Logic



Leads and Lags

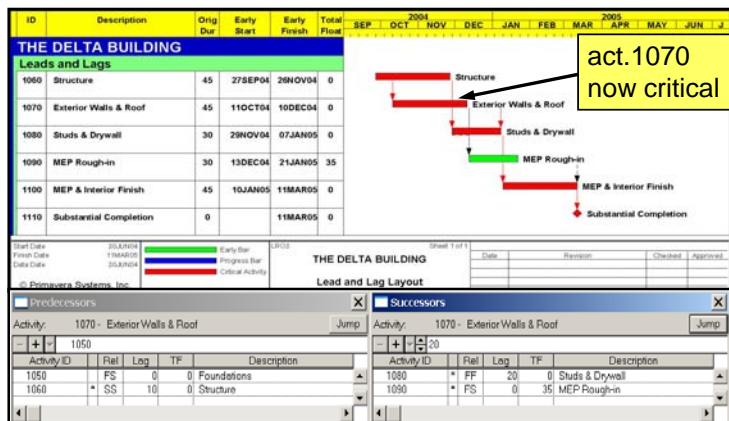


Activity 1070 with no lag on F-S to 1080 and 20d TF

B. Problems with Logic



Leads and Lags



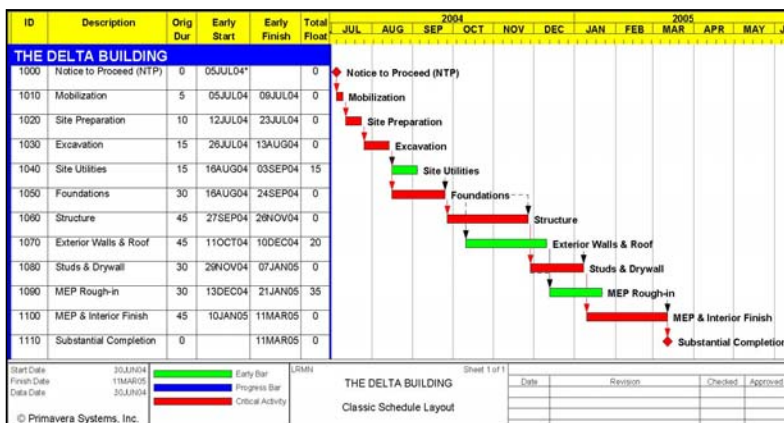
Activity 1070 with 20d lag to successor and 0d total float

Best Practice is the Logical Use of Lead/Lags

B. Problems with Logic



Critical and Sub-Critical Paths

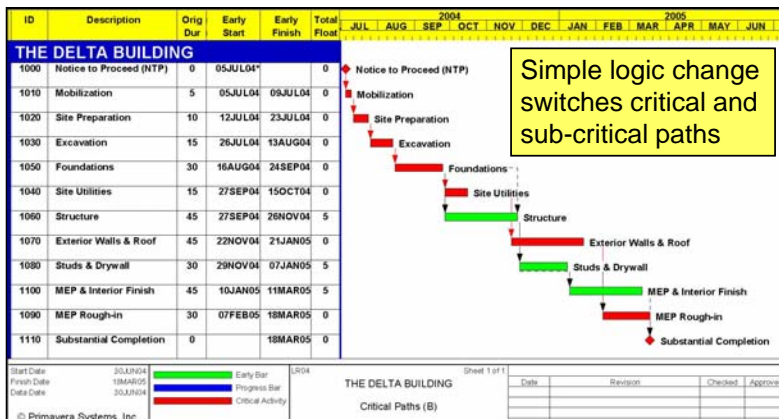


Critical path and critical activities are indicated by the red bars and arrows. The Critical path runs through act. 1050, 1060, 1080, 1100.

B. Problems with Logic



Sub-Critical Paths



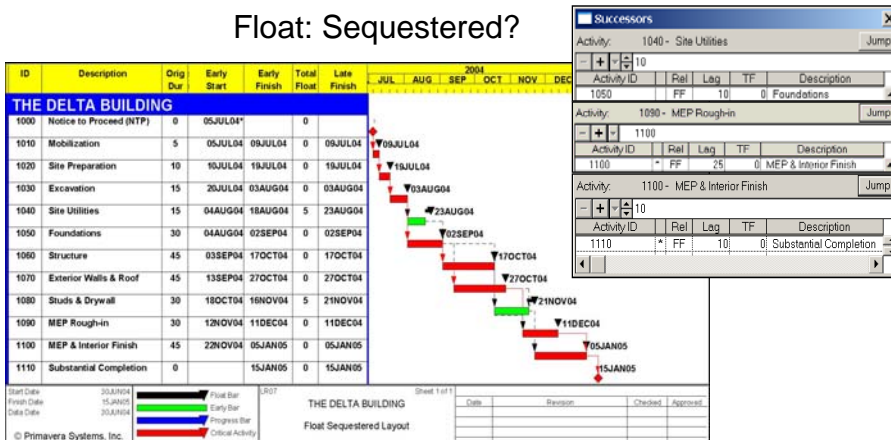
Critical path has shifted and now runs through acts. 1040, 1070, 1090.

Best Practice: Check if Critical Path is Reasonable

B. Problems with Logic



Float: Sequestered?



The Contractor attempts to suppress float to put activities in a critical or near critical status by adding lags on F-F logic for 1040, 1090 and 1100.

Best Practice: Do not Manipulate Float

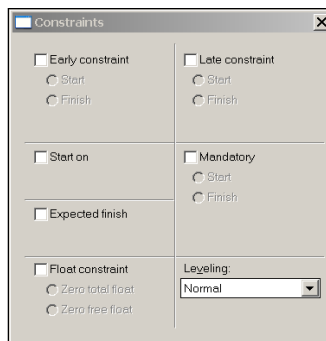
B. Problems with Logic



Date Constraints on Activities and/or Milestones

P6 Constraints

- ✓ Early Start / Early Finish
- ✓ Late Start / Late Finish
- ✓ Start On / Expected Finish
- ✓ Mandatory Start / Finish
- ✓ Zero Total Float / Zero Free Float

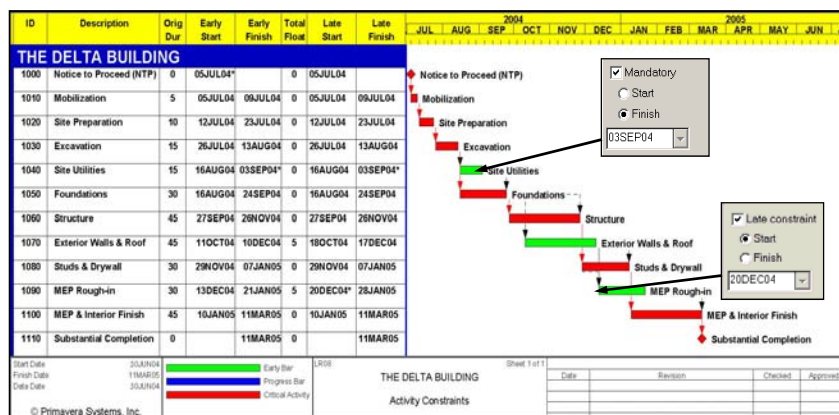


A constraint is a fixed date that is imposed by the scheduler on the start or finish of an activity or milestone.

B. Problems with Logic



Date Constraints on Activities



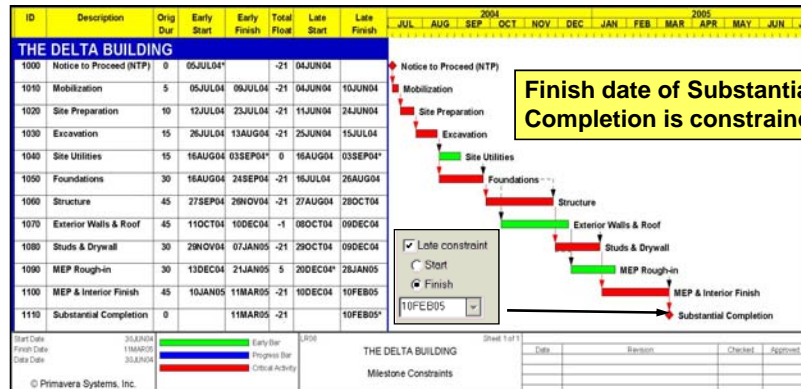
Mandatory Finish Constraint on act. 1040 resets total float from 15 to 0
 Late Start Constraint on act. 1090 sets total float from 35 to 5

Best Practice: Do not Constrain Starts or Finishes

B. Problems with Logic



Date Constraints on Milestones



Total Float is misrepresented by all types of Constraints. In this case the TF is forced negative by the constraint.

Constraints may be useful in running "What If" scenarios.

Best Practice: Do not Constrain Milestones

C. Problems with Time & Resources



Contract Time: Is it Enough?

1. Usually the owner or designer defines Contract Time
2. Is the specified Contract Time realistic?
3. The Contractor is under duress to meet Contract Time
4. The Schedule can be forced to fit the Contract Time
5. Unreasonable Contract Time sets up a potential claim
6. Unreasonable Contract Time sets up a potential failure to meet the contract time requirements

C. Problems with Time & Resources



Multiple Calendars

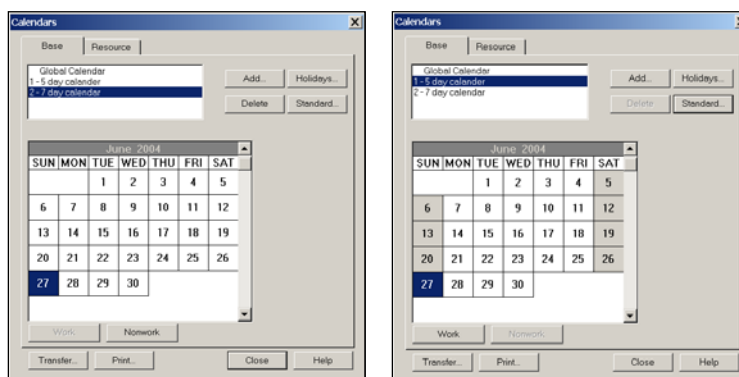
- A Calendar defines the working days and times for an activity
- Calendars indicate non-working days, for example: weekends, holidays, weather days
- Scheduling programs allow us to specify several calendars and choose which one to use for each activity
- Concrete curing activities may have a 7 day calendar
- Board or agency approvals may be on a once or twice per month calendar on specific days of the month
- Due to different calendars, activities on the same logic path may have different float values
- Omitted non-working days create a false schedule
- Holidays and weather days vary per jurisdiction and location

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C. Problems with Time & Resources



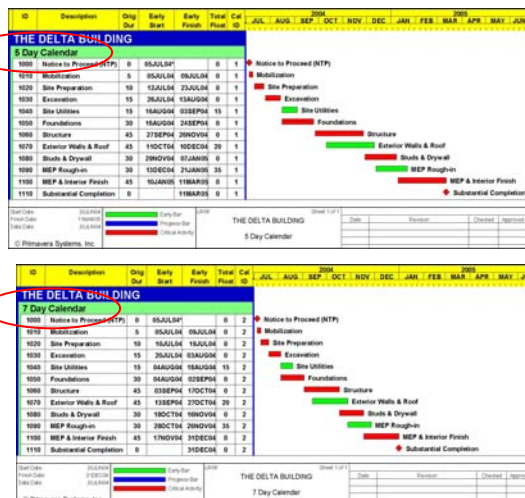
Multiple Calendars



Calendars can be specified for any eventuality making it difficult to follow some of the date calculations in the schedule reviews.

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C. Scheduling with Multiple Calendars



There are substantial differences in these schedules using different calendars.

D. Criteria for Reviewing the Baseline Schedule



1. Review Activities
2. Review Logic
3. Review Constraints
4. Review Calendars
5. Review Resources
6. Software for Reviewing Schedules

D. Criteria for Reviewing the Baseline Schedule




1. What is your quality control plan for preparation of the baseline schedule?
2. Is the schedule realistic?
3. Can the project be completed in the timeframe allowed?
4. Has the schedule been manipulated?
5. Is the schedule manageable? Not too small; not too large?
6. Have all stakeholders bought into the baseline schedule?
7. Has the subcontractors bought into the baseline schedule?

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Schedules: Back to Basics

- I. CPM Scheduling Basics
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- III. The Schedule Update
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- V. Proving and Tracking Damages

III. The Schedule Update 

- A. Updating the Schedule
- B. Problems with Activities
- C. Problems with Logic
- D. Other Update Issues

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A. Updating the Schedule 

- Actual Performance?
- Proper Input?
- Does it reflect the work?
- A schedule becomes out-of-date and useless without updating.

44

A. Updating the Schedule



Reasons for Updating

- Contract Requirement – what detail is required?
- Record actual start and finish dates
- Compare actual progress to as planned progress
- Forecast dates and resources for remaining work
- Use as basis for accelerating the work schedule
- Use as basis for time extensions

45

B. Problems with Updating Activities



Adds/Deletes/Splits - Change Orders Impacts, Delays and Suspensions

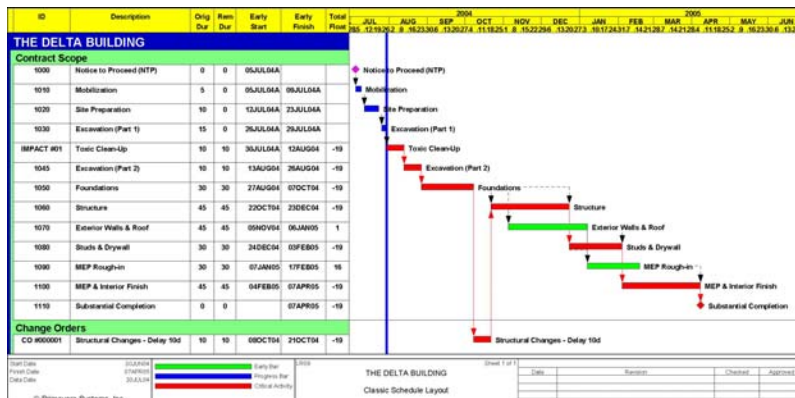
- Scope and/or performance of existing activities may be affected by change orders, suspension of work, added or deleted scope, late procurement, permit problems, late installations or delayed approvals.
- Revise activities to reflect reality
- Impacts may require the addition or deletion of activities

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B. Problems with Updating Activities



Adds/Deletes/Splits - Change Orders Impacts, Delays and Suspensions




Add in a toxic clean-up, delete site utilities from the scope, split the excavation into two tasks and throw in a change order for the first update.

C. Problems with Updating Logic

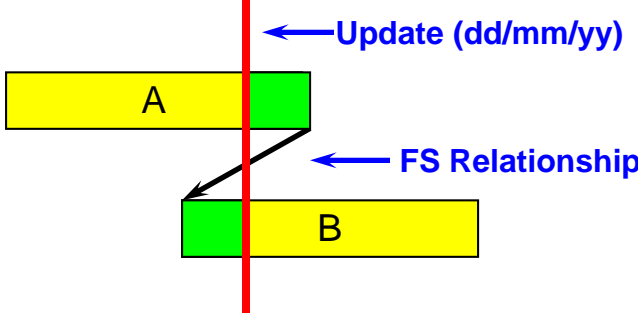


1. Out of Sequence Progress
2. Retained Logic
3. Progress Override
4. Revised Logic




C. CPM Schedule Logic

Out of Sequence Progress - the actual Start of activity B jumped ahead of the planned FS logic between activities A and B

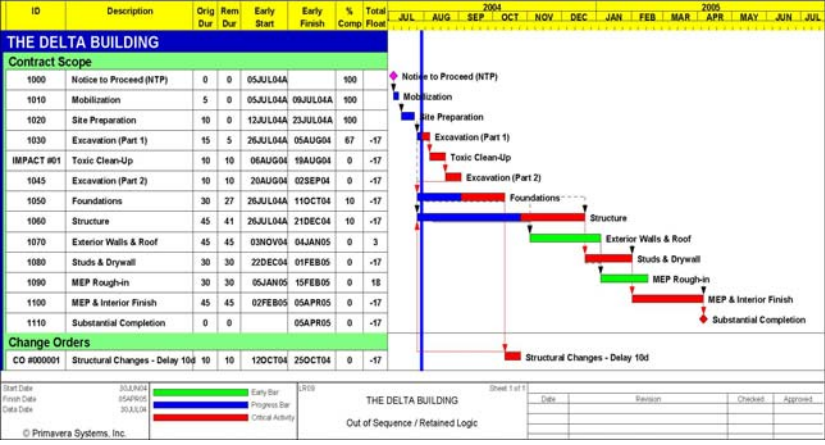


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C. Out of Sequence Progress with Retained Logic

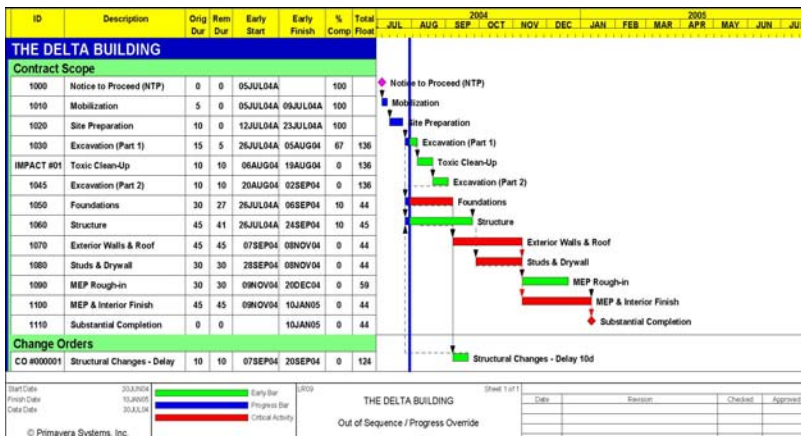
ID	Description	Orig Dur	Rem Dur	Early Start	Early Finish	% Comp	Total Float
THE DELTA BUILDING							
Contract Scope							
1000	Notice to Proceed (NTP)	0	0	05JUL04A		100	
1010	Mobilization	5	0	05JUL04A	09JUL04A	100	
1020	Site Preparation	10	0	12JUL04A	23JUL04A	100	
1030	Excavation (Part 1)	15	5	26JUL04A	05AUG04	67	-17
IMPACT #01							
	Toxic Clean-Up	10	10	06AUG04	19AUG04	0	-17
1045	Excavation (Part 2)	10	10	20AUG04	02SEP04	0	-17
1050	Foundations	30	27	26JUL04A	11OCT04	10	-17
1060	Structure	45	41	26JUL04A	21DEC04	10	-17
1070	Exterior Walls & Roof	45	45	03NOV04	04JAN05	0	3
1080	Studs & Drywall	30	30	22DEC04	01FEB05	0	-17
1090	MEP Rough-in	30	30	05JAN05	15FEB05	0	18
1100	MEP & Interior Finish	45	45	02FEB05	05APR05	0	-17
1110	Substantial Completion	0	0		05APR05	0	-17
Change Orders							
CO #000001	Structural Changes - Delay 10d	10	10	12OCT04	25OCT04	0	-17



Act. 1050 and 1060 started out of sequence. The activities are being held out to the early dates of the successors creating an incorrect finish date.

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C. Out of Sequence Progress with Progress Override



Act. 1050 and 1060 started out of sequence. Progress override will calculate the dates as if the logic had been revised or repaired. Automatic features, if used, need to be monitored and checked.

Best Practice: Do Not Use Override Unless Directed

D. Other Update Issues



1. As-Built Dates: Real or False
2. Delay: Add It or Hide It?
3. The Audit: Schedule Comparison Programs
4. Schedule Out-of-Date: Revision Needed?
5. Is it a Revision or Time to Re-Baseline?

D. Other Update Issues



Schedule Out-of-Date: Is a revision needed or time to Re-Baseline?

Problems:

- Schedule no longer represents the project
- New information that will expand the schedule
- No one wants to spend the effort to do this!
- Who's going to pay for it?

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Schedules: Back to Basics

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Delay Claims and Time Extensions



- How to recoup the costs and obtain a time extensions for delays?
- “Pitfalls, tricks and traps” that can foil time extension request and delay claims?

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Delaying Events



- Events causing delay:
 - Single Change Order
 - Multiple Change Order cumulative impact
 - Differing Site Conditions
 - Delays caused by others not under your control
 - Force Majeure
 - Unusual weather

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Types of Delays



- Three General Types of Delays
 - Excusable delays
 - Concurrent delays
 - Compensable delays

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Types of Delays



- Excusable delays – Delays for which the Contractor has not assumed the risk but, also, not caused by Owner. Contractor may get a time extension but no damages (money)
 - Contract provisions may state delay risks for which the Contractor is not liable.
 - Certain number of weather days beyond which the Contractor is not liable
 - Force Majeure provision
 - weather
 - labor unrest
 - civil unrest
 - other “Acts of God”

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Types of Delays



- Concurrent delays – Neither Owner or Contractor is solely responsible for delay and therefore no damages for the Contractor are warranted
 - Delays caused by both parties
 - Must be to the Critical Path
 - Time extension is the only Remedy
 - Saves Contractor/Subs from LD's
 - Saves Owner from delay damage claims

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Types of Delays



- Compensable delays – delays not anticipated at the time of contract which are due to Owner's act or omission
 - Contractor may recover time extension and damages (money); e.g.,
 - Delays providing engineering and other design drawings
 - Access to site
 - Disruption due to numerous changes

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Acceleration/Recovery (The Difference Between the 2)



- Acceleration
 - Contractor/Subs extra costs incurred due to compressed schedule.
 - Additional manpower, overtime, inefficiencies
 - Increased overhead
 - To recover for acceleration, must prove:
 - Demand to accelerate
 - Actual or Constructive
 - Delays requiring acceleration excusable & not GC/Sub caused
 - GC/Sub, in fact, accelerated and incurred increased costs

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Acceleration/Recovery (Difference between the 2)



- Recovery
 - Delay caused by GC/ Subs - not acceleration, it is recovery in “making up lost schedule time.”
 - In recovery scenario, GC/Sub extra costs due to compressed schedule NOT recoverable from Owner.

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Types of Impacts



1. Critical
2. Non-Critical
3. Serial
4. Concurrent

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Types of Impacts




An impact is event that affects the timing of the work of an activity

- Changes start of work
- Changes finish of work
- Changes duration of work
- Suspends work

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Types of Impacts




An impact may be attributed to any party in the project

- Owner/Stakeholder
- Designer/Consultants
- Contractor/Subcontractor
- Government and Regulatory Agencies
- “Force Majeure” or “Acts of God”

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Types of Impacts




Critical Impacts

- A Critical Impact - event that affects the timing of a critical activity in the schedule.
- Only delays to the critical path can be considered critical and must delay completion or milestone dates of the project to be legitimate.

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Critical Impacts




ID	Description	Orig Dur	Rev Dur	Early Start	Early Finish	Total Float	2004												2005															
							JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	A	JAN	FEB	MAR	APR	MAY	JUN	JUL	A						
THE DELTA BUILDING																																		
Contract Scope																																		
1000	Notice to Proceed (NTP)	0	0	05JUL04A			Notice to Proceed (NTP)																											
1010	Mobilization	5	0	05JUL04A	09JUL04A		Mobilization																											
1020	Site Preparation	10	0	12JUL04A	23JUL04A		Site Preparation																											
1030	Excavation (Part 1)	15	5	26JUL04A	05AUG04	-24	Excavation (Part 1)																											
IMPACT #01							Toxic Clean-Up																											
1045	Excavation (Part 2)	10	10	06AUG04	16AUG04	-24	Excavation (Part 2)																											
1050	Foundations	30	30	03SEP04	14OCT04	-24	Foundations																											
1060	Structure	45	45	29OCT04	30DEC04	-24	Structure																											
1070	Exterior Walls & Roof	45	45	12NOV04	13JAN05	-4	Exterior Walls & Roof																											
1080	Studs & Drywall	30	30	31DEC04	10FEB05	-24	Studs & Drywall																											
1090	MEP Rough-in	30	30	14JAN05	24FEB05	11	MEP Rough-in																											
1100	MEP & Interior Finish	45	45	11FEB05	14APR05	-24	MEP & Interior Finish																											
1110	Substantial Completion	0	0		14APR05	-24	Substantial Completion																											
Change Orders																																		
CO #000091	Structural Changes - Delay 10d	10	10	15OCT04	29OCT04	-24	Structural Changes - Delay 10d																											

A toxic clean-up and a change order are critical impacts to this schedule.

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Non-Critical Impacts



- A Non-Critical Impact - event that affects the timing of a non-critical schedule activity
- Delay to completion of a non-critical activity is absorbed in the "Total Float"
- When Total Float is fully used, activity becomes critical, and continued delay to that activity can then delay the project

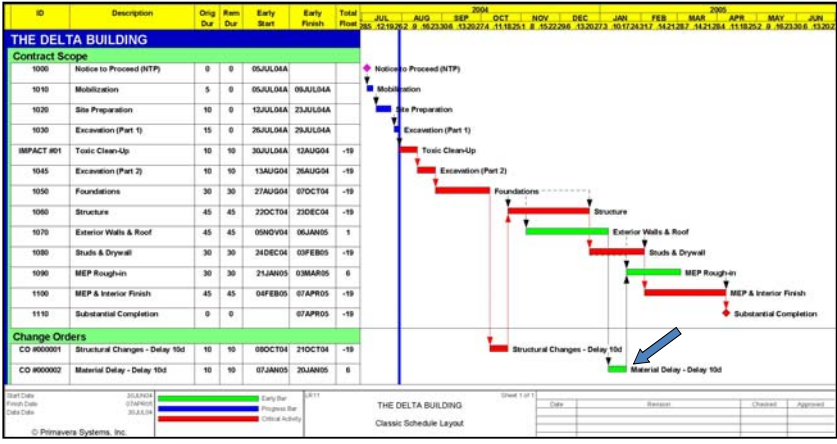
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Non-Critical Impacts



DELTA consulting group
MAKING the DIFFERENCE


ID	Description	Orig Dur	Rev Dur	Early Start	Early Finish	Total Float	2004												
							JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	
THE DELTA BUILDING																			
Contract Scope																			
1000	Notice to Proceed (NTP)	0	0	06JUL04	06JUL04														
1010	Mobilization	5	0	06JUL04	06JUL04														
1020	Site Preparation	10	0	12JUL04	21JUL04														
1030	Excavation (Part 1)	15	0	26JUL04	29JUL04														
IMPACT #01	Toxic Clean-Up	10	10	30JUL04	12AUG04	-19													
1045	Excavation (Part 2)	10	10	13AUG04	26AUG04	-19													
1050	Foundations	30	30	27AUG04	07OCT04	-19													
1060	Structure	45	45	23OCT04	23DEC04	-19													
1070	Exterior Walls & Roof	45	45	09NOV04	06JAN05	1													
1080	Studs & Drywall	30	30	24DEC04	03FEB05	-19													
1090	MEP Rough-in	30	30	21JAN05	03MAR05	0													
1100	MEP & Interior Finish	45	45	04FEB05	07APR05	-19													
1110	Substantial Completion	0	0	07APR05	07APR05	-19													
Change Orders																			
CO #000001	Structural Changes - Delay 10d	10	10	09OCT04	21OCT04	-19													
CO #000002	Material Delay - Delay 10d	10	10	07JAN05	20JAN05	0													



A material delay for MEP is a non-critical impact to this schedule

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Delay Claims – The Keys to the Kingdom



DELTA consulting group
MAKING the DIFFERENCE

- Key 1 - the Original Baseline Schedule
 - Without knowing plan - not knowing the impact to critical path of work

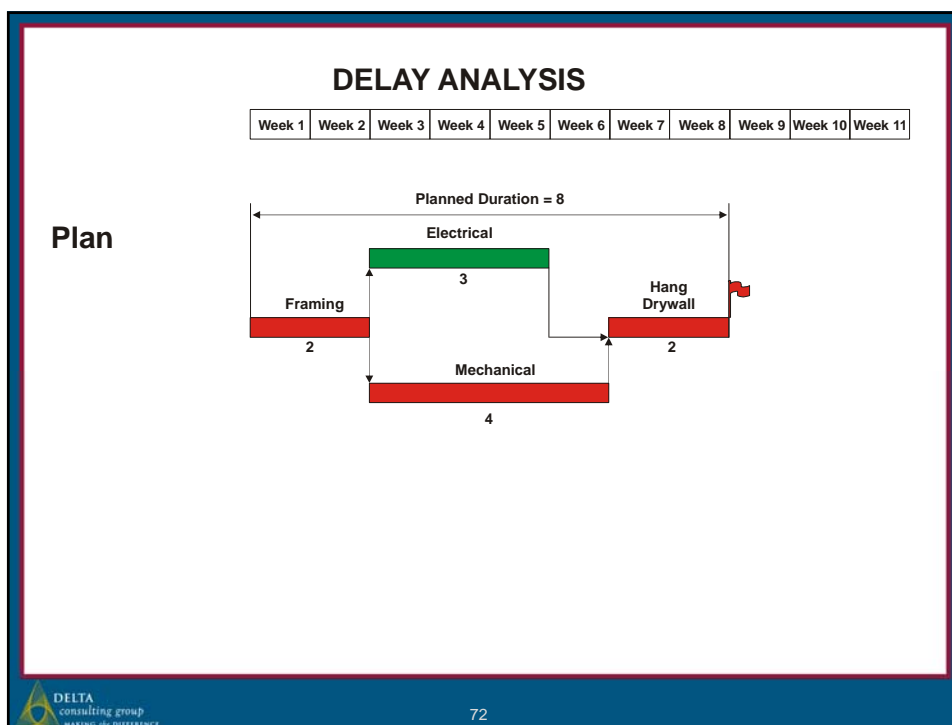
70

Delay Claims – The Keys to the Kingdom

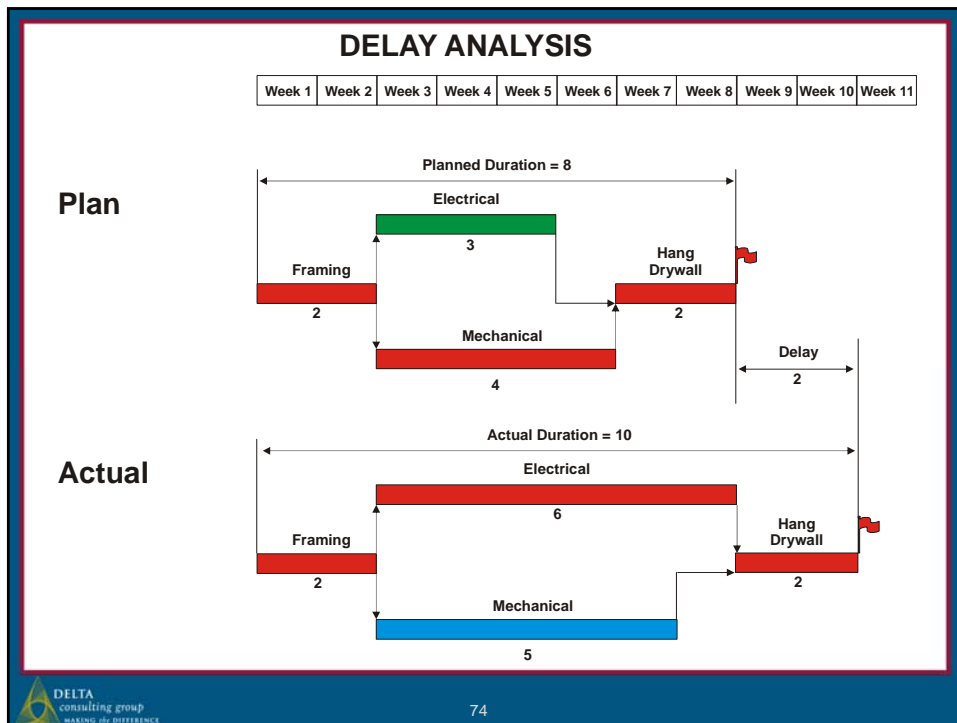
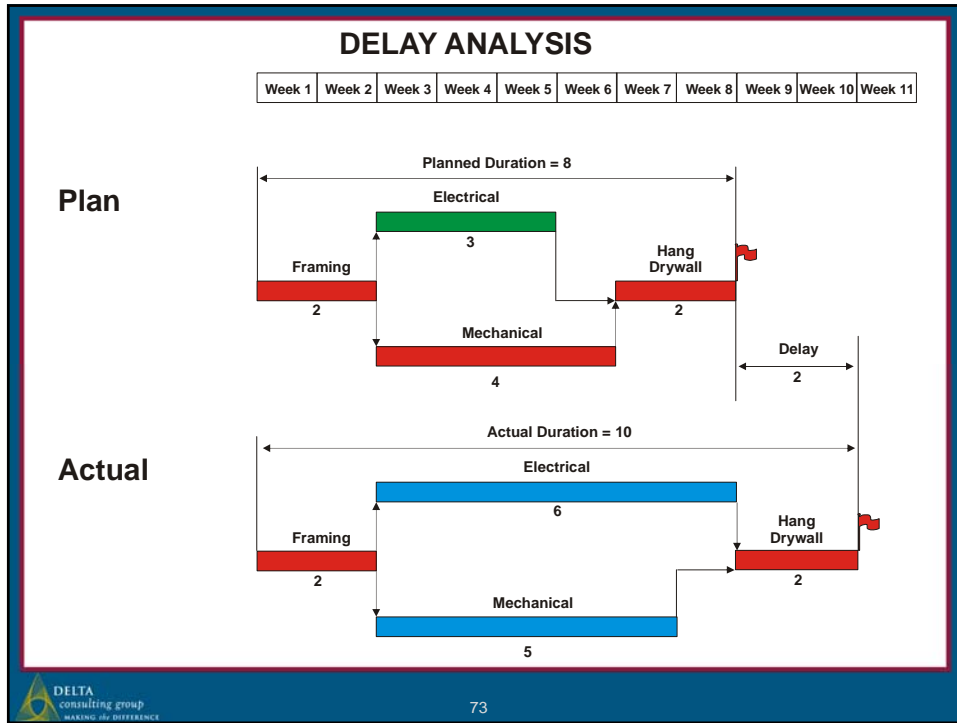


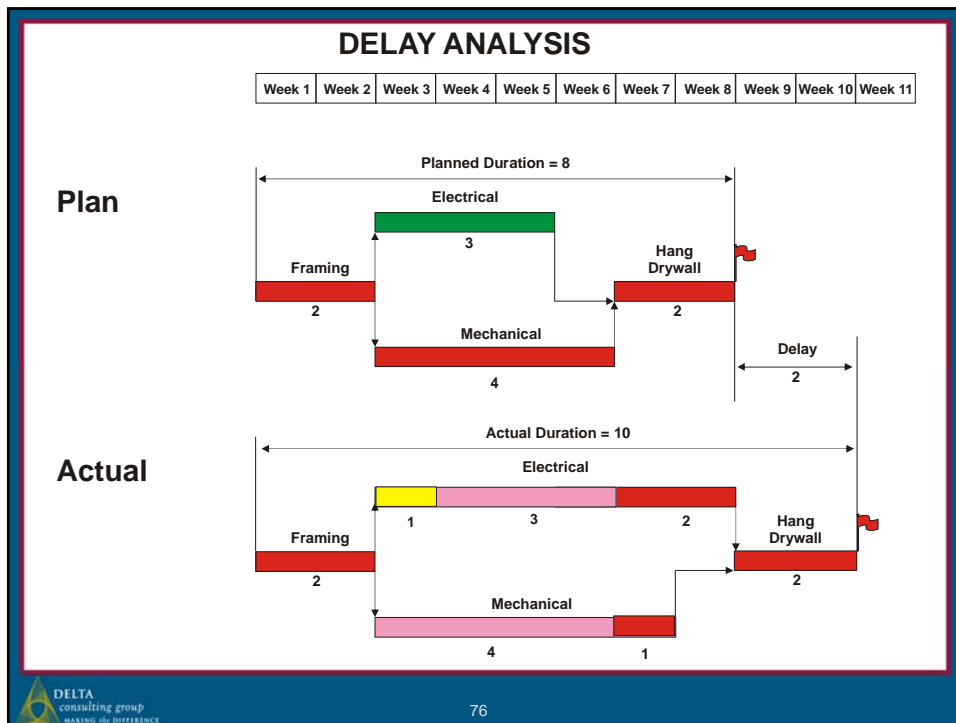
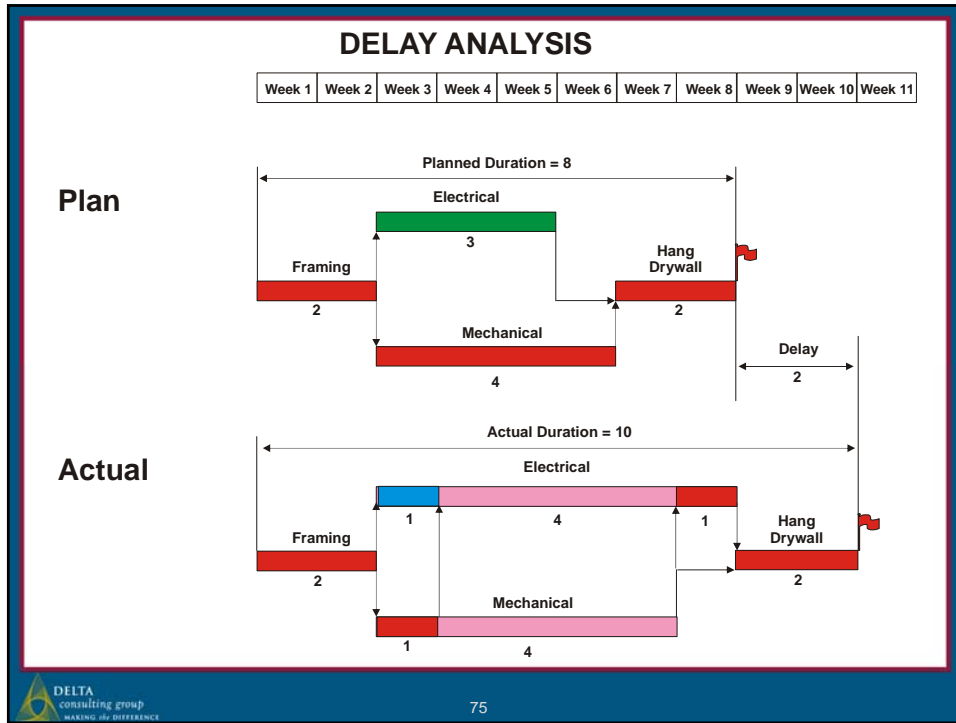
- Key 2 - the Schedule Updates
 - Without knowing where you currently stand in reference to initial plan- can't prove either delay to **critical path**, or **who** caused delay

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Schedules: Back to Basics


- I. CPM Scheduling Basics
- II. The Baseline Schedule
- III. The Schedule Update
- IV. Delay Analysis
- V. Proving and Tracking Damages**

Proving and Tracking Damages



- A. Common Approach
- B. Delay
- C. Disruption
- D. Cumulative Impact

Proving Damages




Basic Approach

- Entitlement
 - Contract
 - Analysis
- Quantification
 - Contract
 - Methodology

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Proving Damages



Delay

- Entitlement
 - Contract
 - Allowable: No damage for delay
 - Notice provisions
 - Methodology specified
 - Analysis
 - Prospective
 - Retrospective

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Proving Damages



Delay

- Quantification
 - Contract
 - Allowable: FOOH, HOOH
 - Stipulated
 - Methodology
 - Daily Rate
 - Itemized


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Damages



- Contractor must show ACTUAL damage, i.e., it actually incurred costs because of the delay
 - Potential damages might be:
 - Increased labor costs
 - Increased material costs
 - Additional field overhead
 - Additional home office overhead
 - Inefficiency costs


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Proving Damages 

Disruption

- Entitlement
 - Contract
 - Allowable
 - Notice provisions
 - Analysis
 - Research
 - Presentation of findings

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Proving Damages 

Disruption

- Quantification
 - Contract
 - Methodology
 - Measured-Mile
 - Industry studies

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THANK YOU