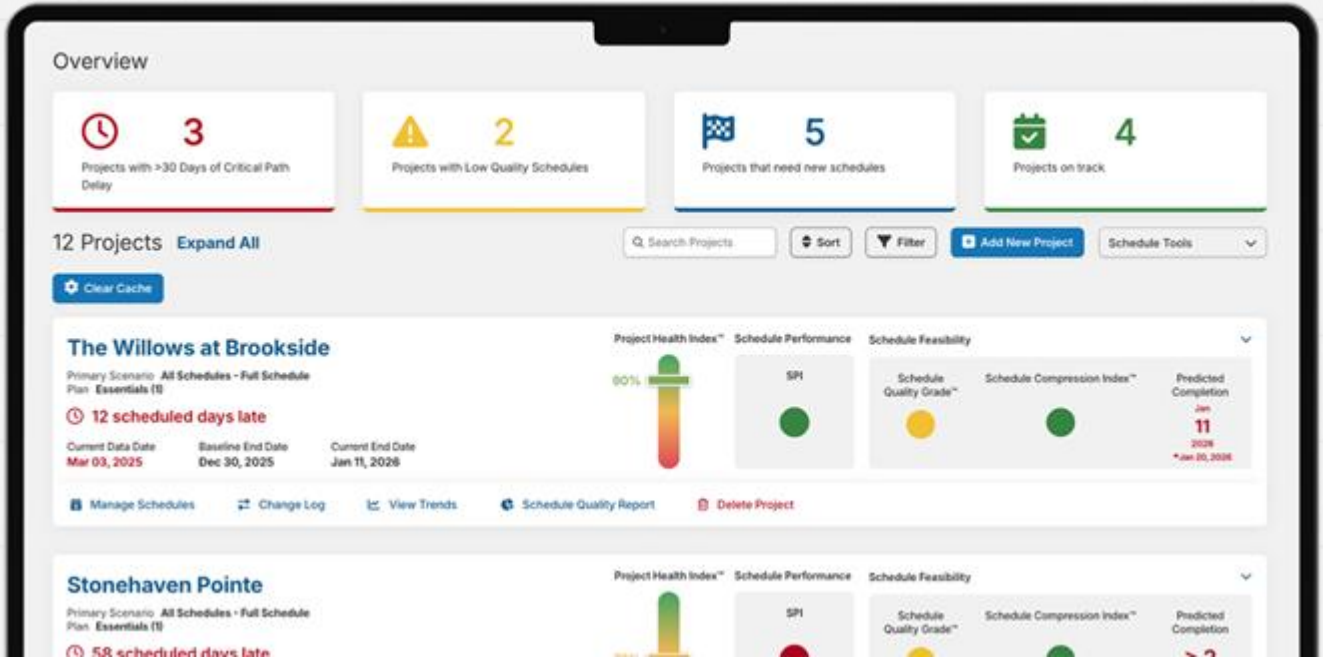
SmartPM

Sharpening Your CPM Scheduling Skills

Building Stronger Schedules for Project Outcomes



Michael Pink

Founder & CEO of SmartPM

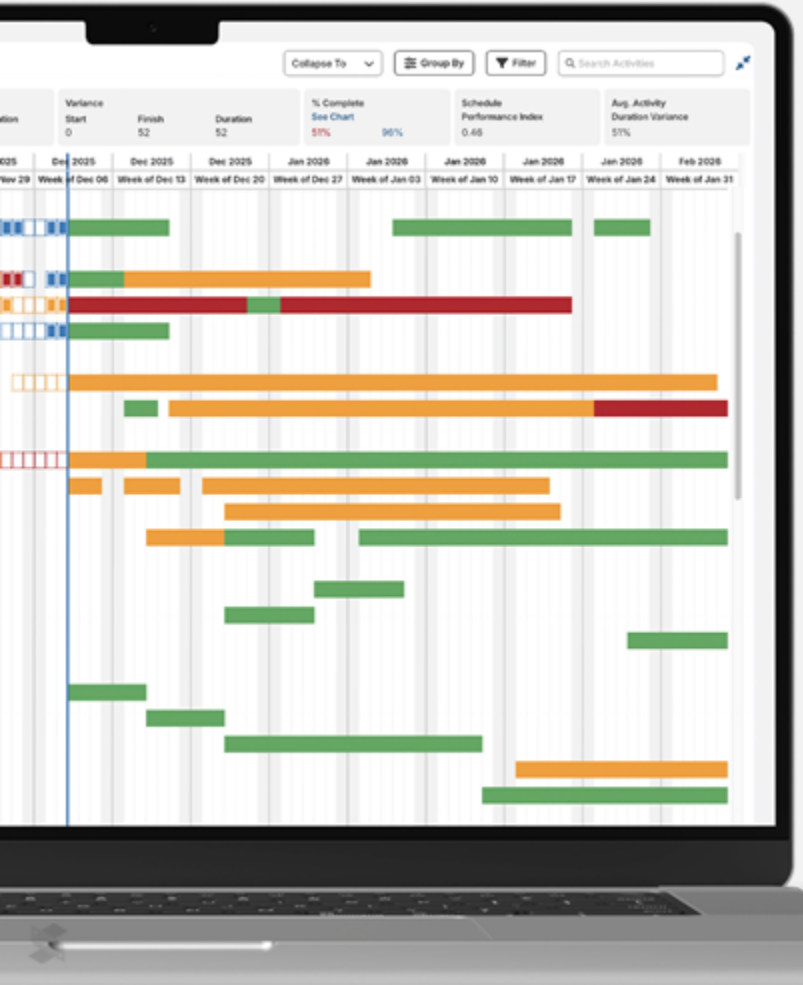
- 20 years as a Construction Schedule and Delay Analyst (Deloitte, KPMG, FTI)
- Developed Project Controls Software
- BS in Industrial Engineering from Georgia Tech
- MBA from New York University

Peter Rowland

Vice President of Sales at SmartPM

- Vice President, Sales - SmartPM
- Six Sigma Green Belt, CDT, BCI
- 20 years Contech Sales + Ops

Scan For a Copy of Today's Presentation



What is CPM Scheduling?

“Critical Path Method” or “CPM” Scheduling is a methodology designed to assist in the management of complex projects that uses an algorithm to generate a Gantt Chart (schedule) based on user entry of all anticipated discrete work activities and the relationships between those activities.

More importantly, the CPM algorithm is designed specifically to prioritize the work activities based on their potential for delaying key milestones and the end date of the project.

What is the Point of CPM?

To assist in the effective management of resources on a project to complete a project on time and on budget.

Why is it Needed in Construction?

01 Construction is complex

02 Things rarely, if ever, go as planned

03 Delays are costly (to both parties)

04 It helps in a big way (if executed properly)

Common Misconceptions

- CPM schedules are only for reporting milestones to superiors and clients.
- Creating and updating CPM schedules is a waste of time.
- CPM scheduling is difficult and requires a specialist.

How it Works

- It’s a list of all tasks necessary to complete a construction project.
- Where durations are assigned to each task.
- At which point relationships are assigned amongst the tasks to create order.
- That is next superimposed on a calendar to create a readable plan.

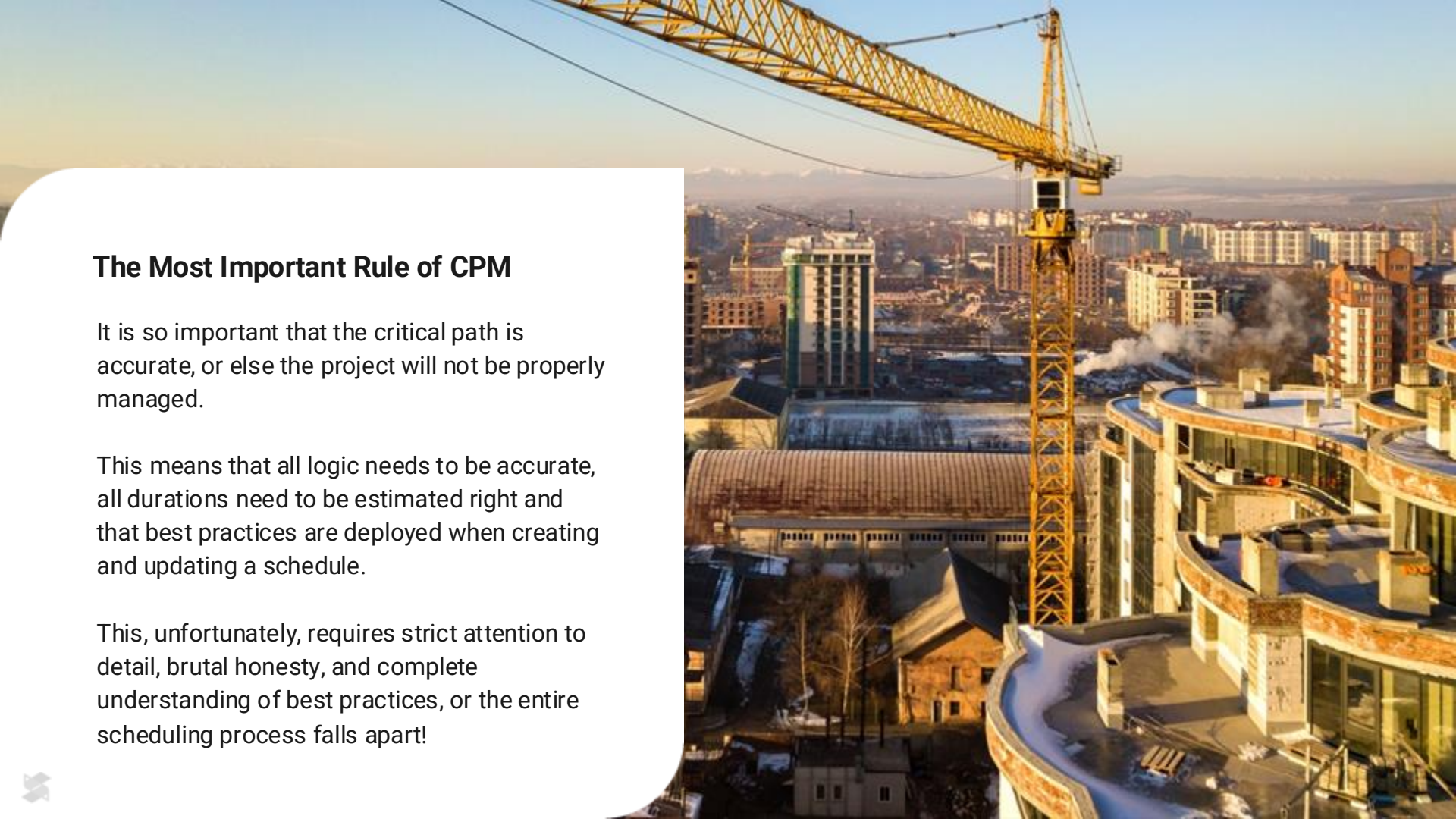
Where priority is assigned to each task based on its sensitivity of delaying the project end date.

The Most Important Rule of CPM

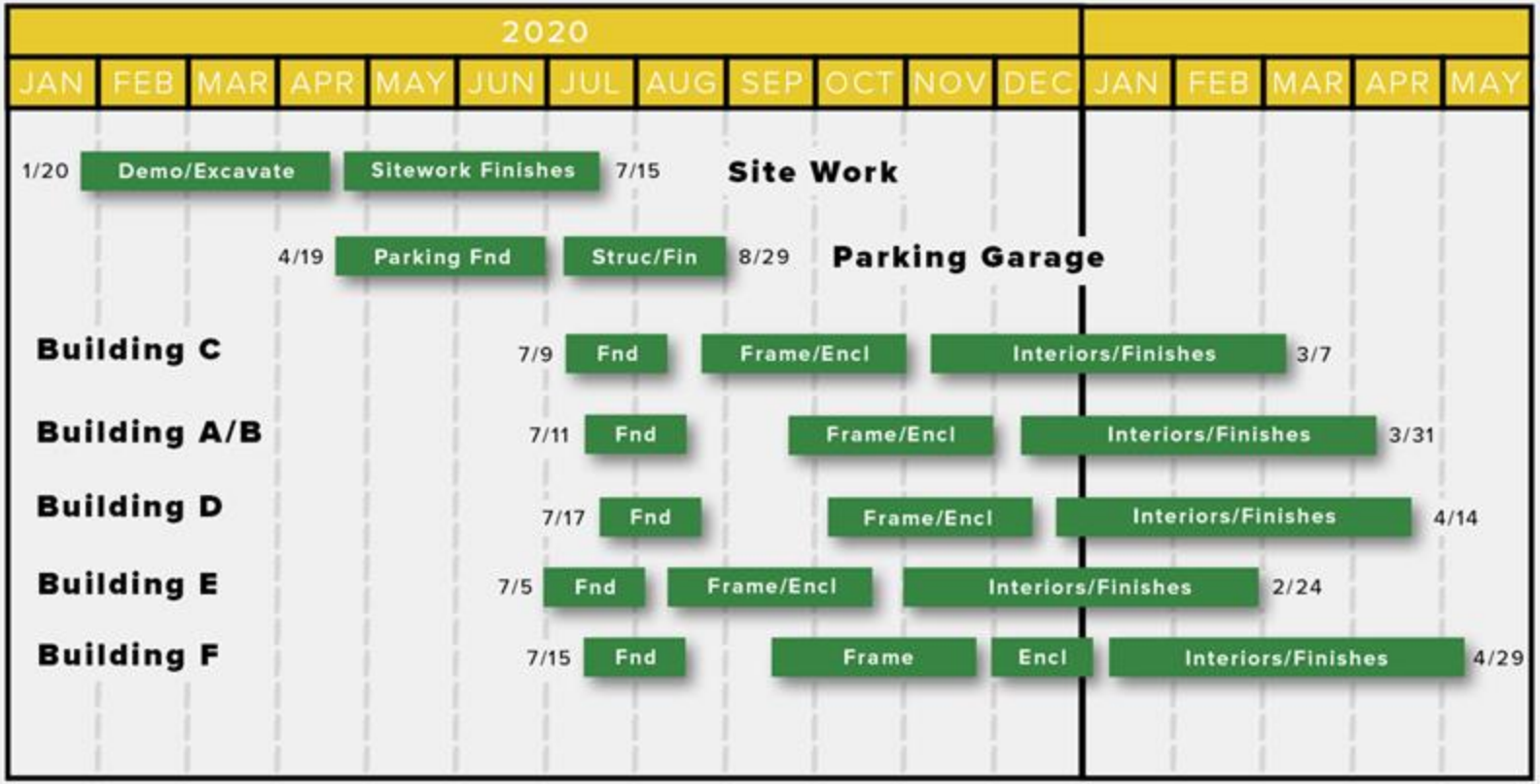
It is so important that the critical path is accurate, or else the project will not be properly managed.

This means that all logic needs to be accurate, all durations need to be estimated right and that best practices are deployed when creating and updating a schedule.

This, unfortunately, requires strict attention to detail, brutal honesty, and complete understanding of best practices, or the entire scheduling process falls apart!



What is the Critical Path?



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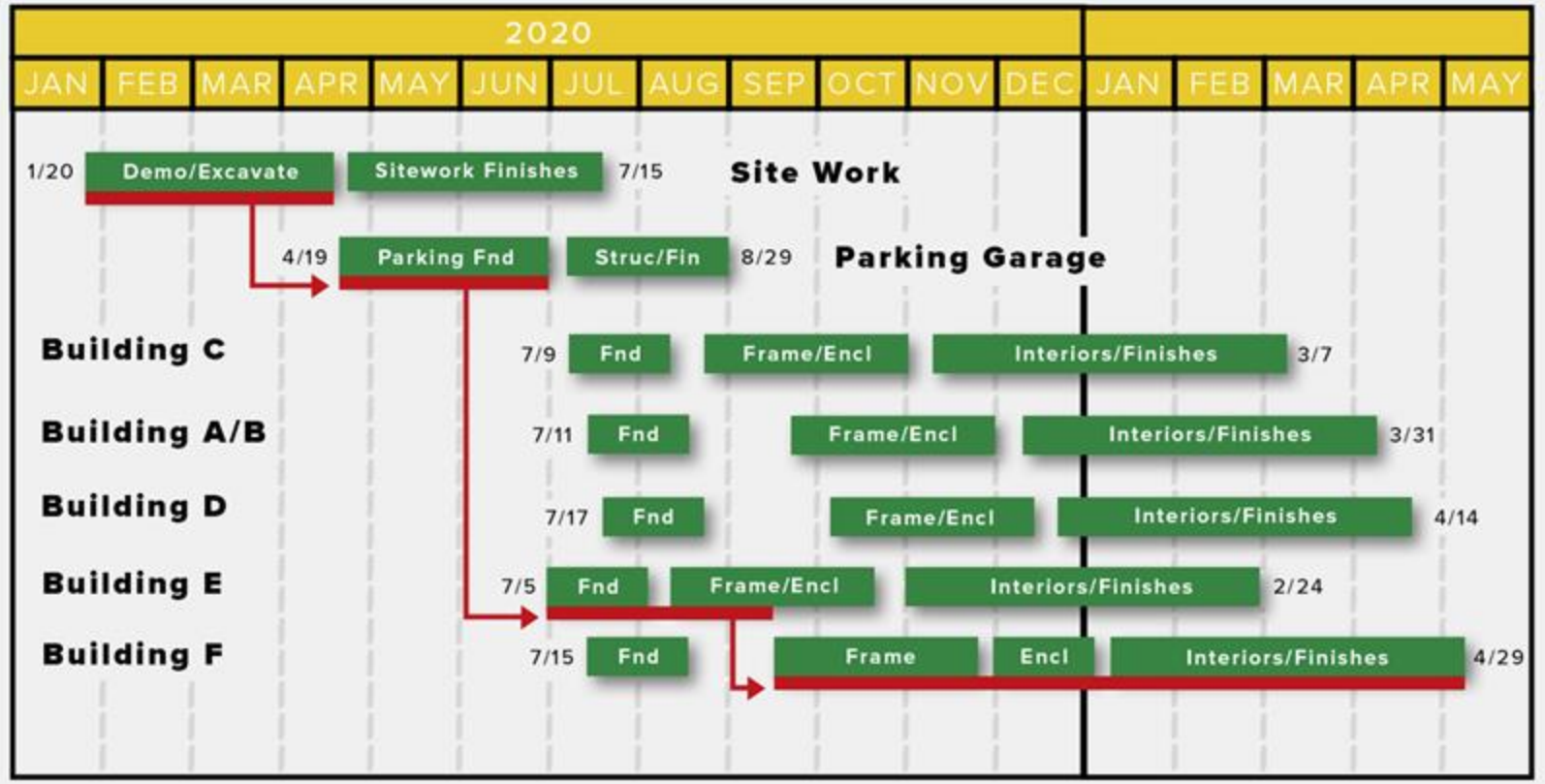


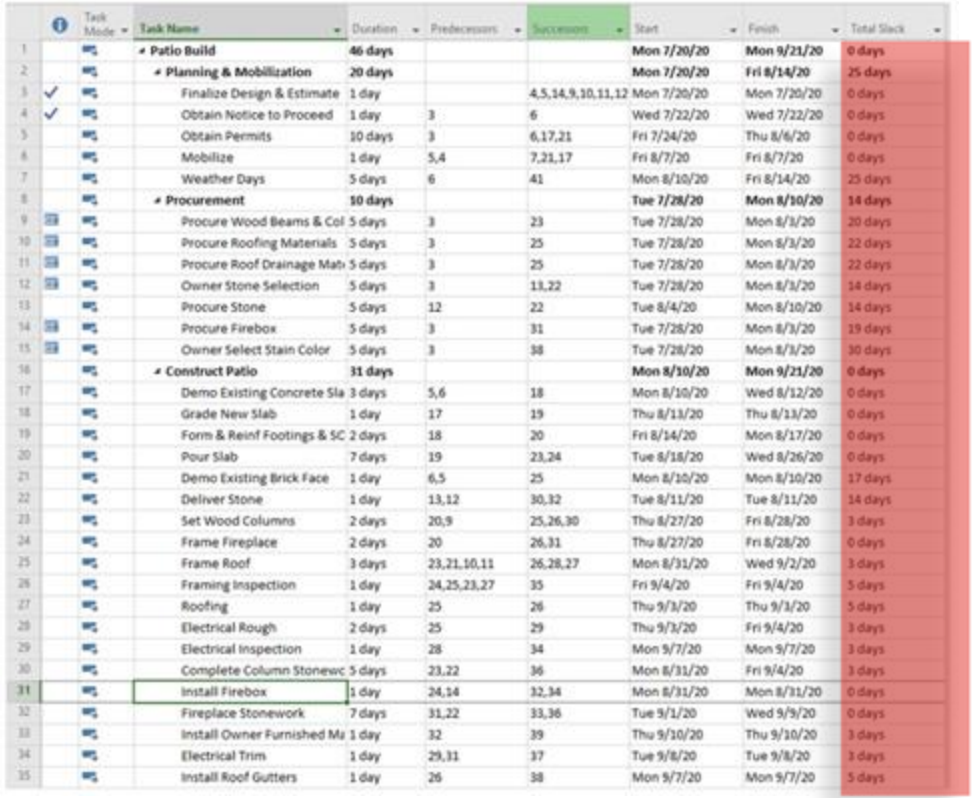
Total Float, Slack and the Critical Path

What is Float/Slack?

- It's the number of days an activity can be delayed before it impacts the end date of the project.

Why is it Relevant?

- It enables project teams to prioritize where to place resources.
- It highlights the most "critical" path towards achievement of the most recent project. end date.



	Task Mode	Task Name	Duration	Predecessors	Successors	Start	Finish	Total Slack
1		**Patio Build**	**46 days**			**Mon 7/20/20**	**Mon 9/21/20**	**0 days**
2		**Planning & Mobilization**	**20 days**			**Mon 7/20/20**	**Fri 8/14/20**	**25 days**
3	✓	Finalize Design & Estimate	1 day		4,5,14,9,10,11,12	Mon 7/20/20	Mon 7/20/20	0 days
4	✓	Obtain Notice to Proceed	1 day	3	6	Wed 7/22/20	Wed 7/22/20	0 days
5		Obtain Permits	10 days	3	6,17,21	Fri 7/24/20	Thu 8/6/20	0 days
6		Mobilize	1 day	5,4	7,21,17	Fri 8/7/20	Fri 8/7/20	0 days
7		Weather Days	5 days	6	41	Mon 8/10/20	Fri 8/14/20	25 days
8		**Procurement**	**10 days**			**Tue 7/28/20**	**Mon 8/10/20**	**14 days**
9		Procure Wood Beams & Col	5 days	3	23	Tue 7/28/20	Mon 8/3/20	20 days
10		Procure Roofing Materials	5 days	3	25	Tue 7/28/20	Mon 8/3/20	22 days
11		Procure Roof Drainage Mat	5 days	3	25	Tue 7/28/20	Mon 8/3/20	22 days
12		Owner Stone Selection	5 days	3	13,22	Tue 7/28/20	Mon 8/3/20	14 days
13		Procure Stone	5 days	12	22	Tue 8/4/20	Mon 8/10/20	14 days
14		Procure Firebox	5 days	3	31	Tue 7/28/20	Mon 8/3/20	19 days
15		Owner Select Stain Color	5 days	3	38	Tue 7/28/20	Mon 8/3/20	30 days
16		**Construct Patio**	**31 days**			**Mon 8/10/20**	**Mon 9/21/20**	**0 days**
17		Demo Existing Concrete Sla	3 days	5,6	18	Mon 8/10/20	Wed 8/12/20	0 days
18		Grade New Slab	1 day	17	19	Thu 8/13/20	Thu 8/13/20	0 days
19		Form & Reinf Footings & SC	2 days	18	20	Fri 8/14/20	Mon 8/17/20	0 days
20		Pour Slab	7 days	19	23,24	Tue 8/18/20	Wed 8/26/20	0 days
21		Demo Existing Brick Face	1 day	6,5	25	Mon 8/10/20	Mon 8/10/20	17 days
22		Deliver Stone	1 day	13,12	30,32	Tue 8/11/20	Tue 8/11/20	14 days
23		Set Wood Columns	2 days	20,9	25,26,30	Thu 8/27/20	Fri 8/28/20	3 days
24		Frame Fireplace	2 days	20	26,31	Thu 8/27/20	Fri 8/28/20	0 days
25		Frame Roof	3 days	23,21,10,11	26,28,27	Mon 8/31/20	Wed 9/2/20	3 days
26		Framing Inspection	1 day	24,25,23,27	35	Fri 9/4/20	Fri 9/4/20	5 days
27		Roofing	1 day	25	26	Thu 9/3/20	Thu 9/3/20	5 days
28		Electrical Rough	2 days	25	29	Thu 9/3/20	Fri 9/4/20	3 days
29		Electrical Inspection	1 day	28	34	Mon 9/7/20	Mon 9/7/20	3 days
30		Complete Column Stonewo	5 days	23,22	36	Mon 8/31/20	Fri 9/4/20	3 days
31		Install Firebox	1 day	24,14	32,34	Mon 8/31/20	Mon 8/31/20	0 days
32		Fireplace Stonework	7 days	31,22	33,36	Tue 9/1/20	Wed 9/9/20	0 days
33		Install Owner Furnished Ma	1 day	32	39	Thu 9/10/20	Thu 9/10/20	3 days
34		Electrical Trim	1 day	29,31	37	Tue 9/8/20	Tue 9/8/20	3 days
35		Install Roof Gutters	1 day	26	38	Mon 9/7/20	Mon 9/7/20	5 days

Total Float, Slack, & the Critical Path

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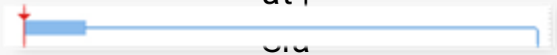
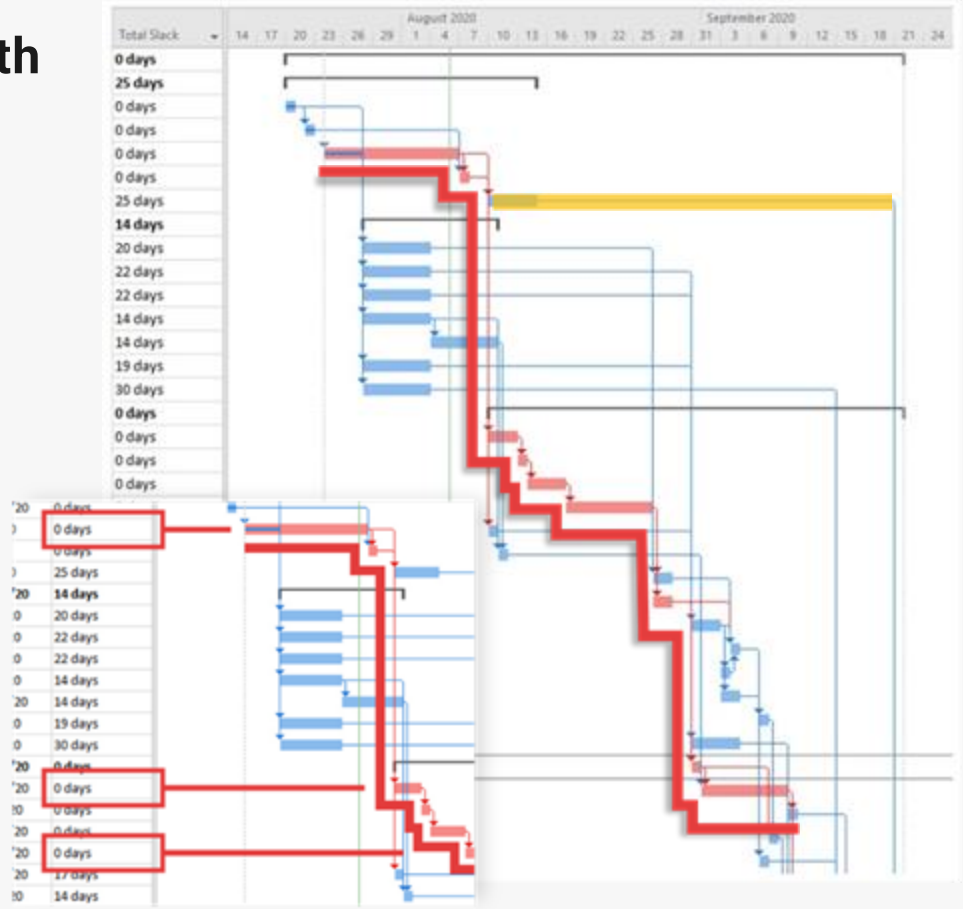


This Activity Can Start/Finish any point in this period without delaying the end date.

Critical
Path

The Critical Path, or Longest Path, is the path that extends from the current date until the end date with no room for delay.



How to Build a Solid Plan and Schedule

Step 1: Choose a CPM Scheduling Tool

Step 2: Conduct Working Sessions to Map Out the Plan

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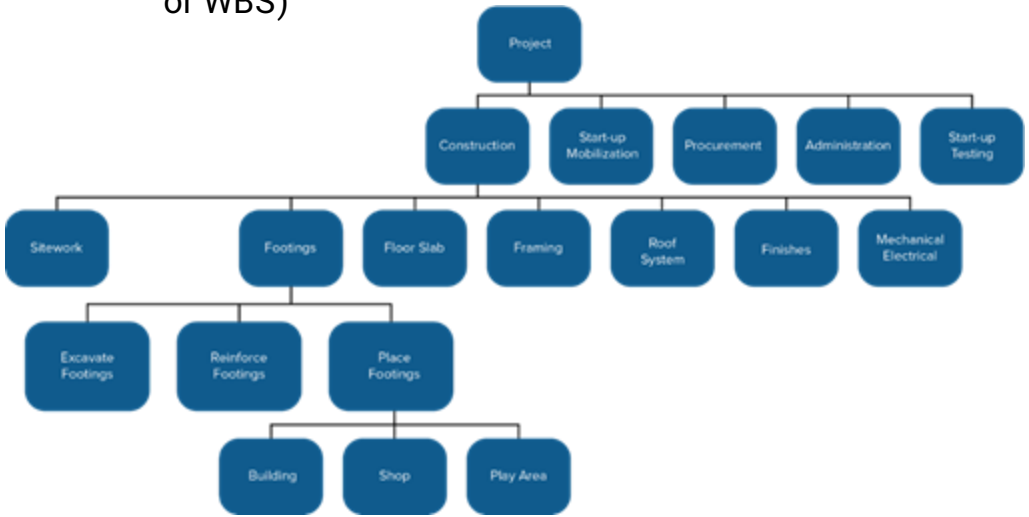
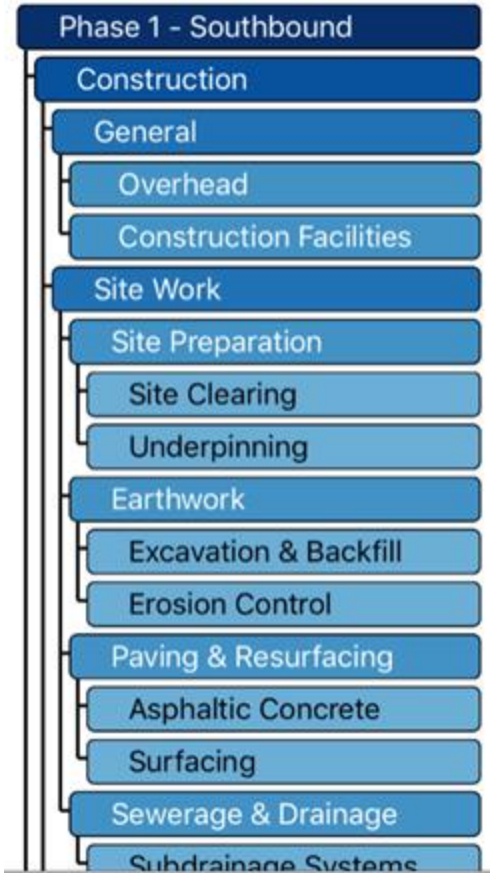
Step 2: Conduct Working Sessions to Map Out the Plan
Step 3: Map Organizational Structure (Activity Codes or WBS)





How to Build a Solid Plan and Schedule

Step 4: List Activities and Set Durations for Each Activity in CPM Tool

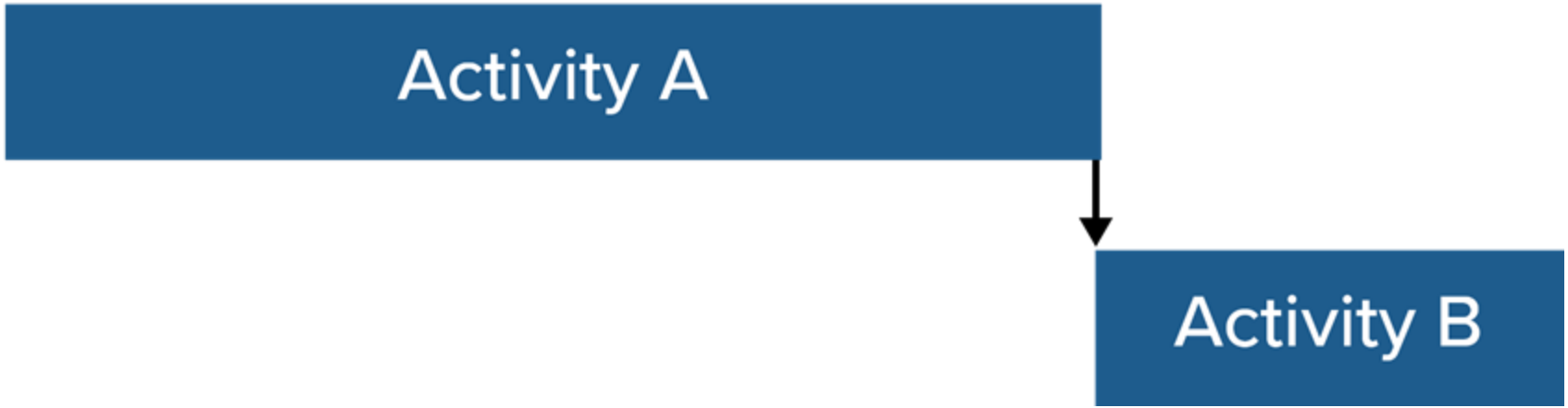
Step 5: Apply Necessary Relationships Among Activities in CPM Tool

- Finish-to-Start: a tie denoting that a Successor can start after its Predecessor finishes.
- Start-to-Start: a tie denoting that a Successor can start after its Predecessor starts.
- Finish-to-Finish: a tie denoting that a Successor can finish after its Predecessor finishes.
- ~~Start-to-Finish: a tie denoting that a Successor can finish after its Predecessor has started.~~
- Lag: a tie denoting that a Successor can finish after its Predecessor has started.

Note: this is the most important part; be sure to be accurate and thorough

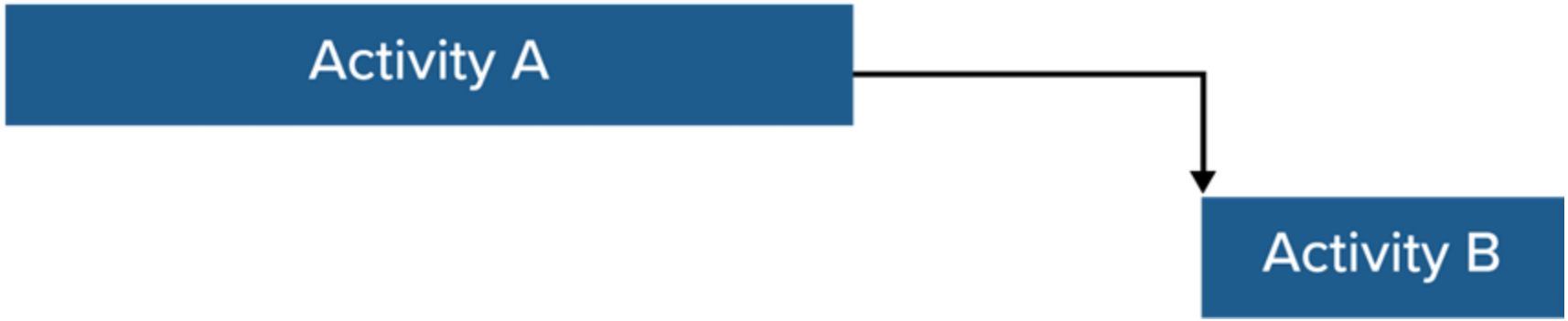
Finish-to-Start

Lag 0



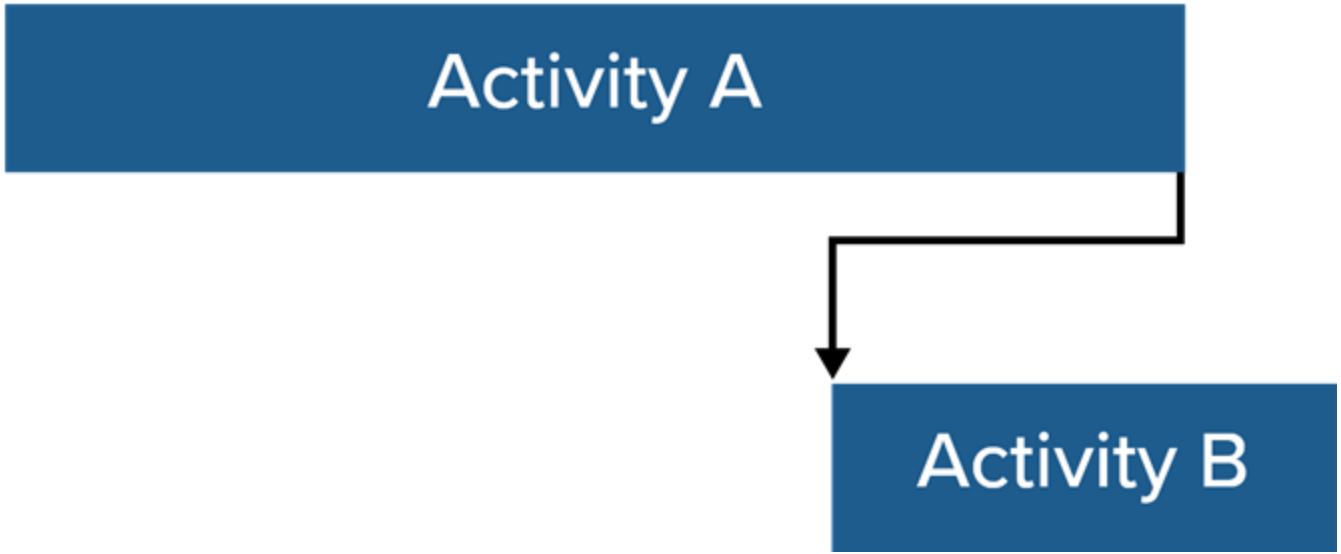
Finish-to-Start

Lag 2



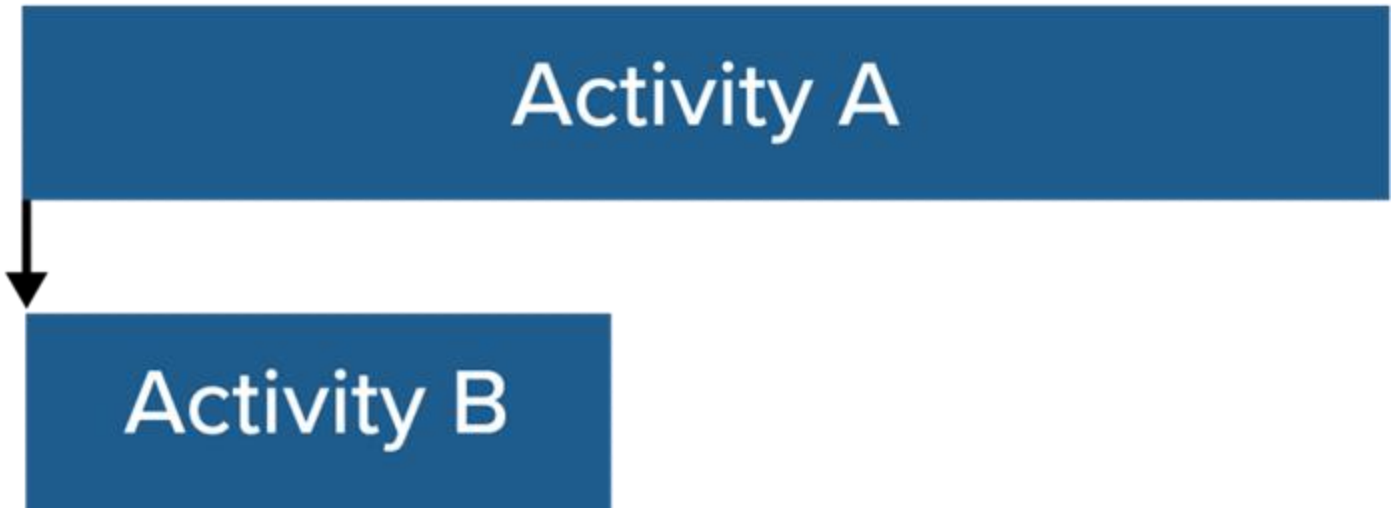
Finish-to-Start

Lag -2

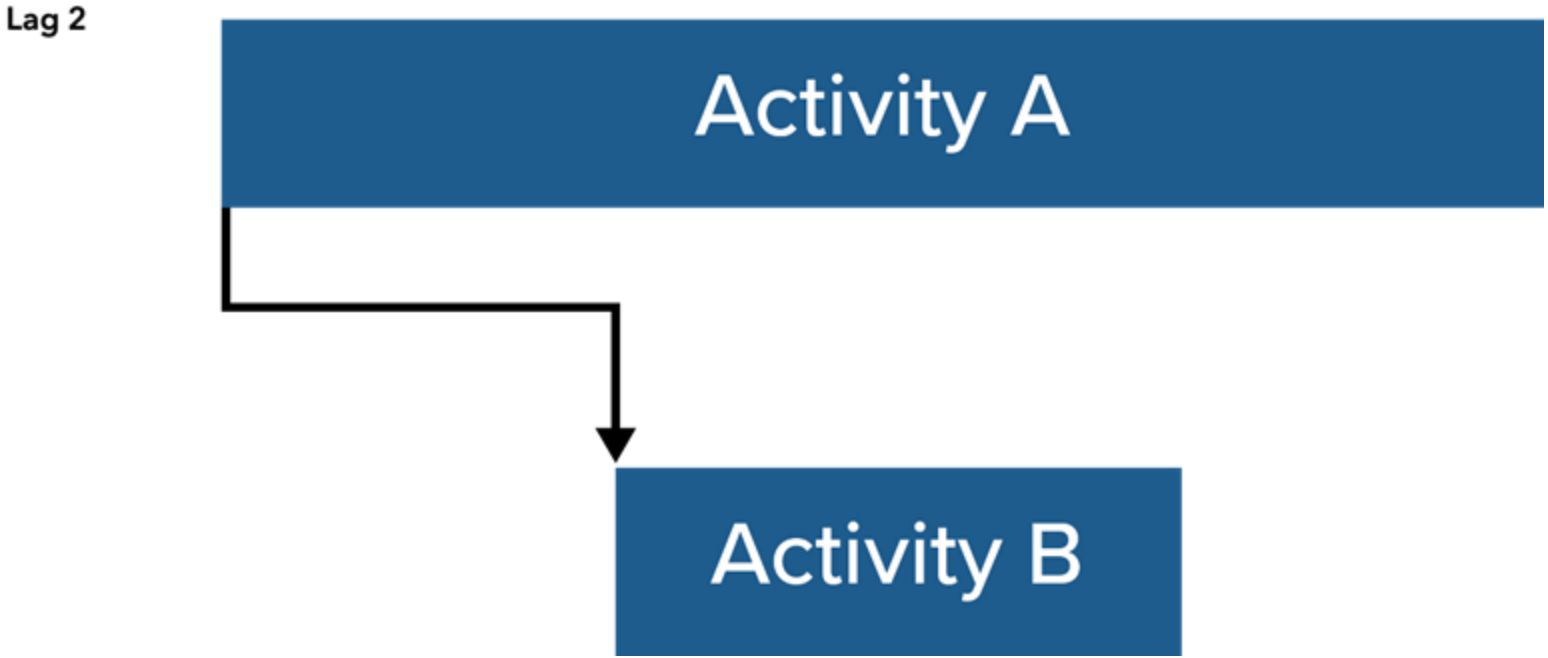


Start-to-Start

Lag 0



Start-to-Start

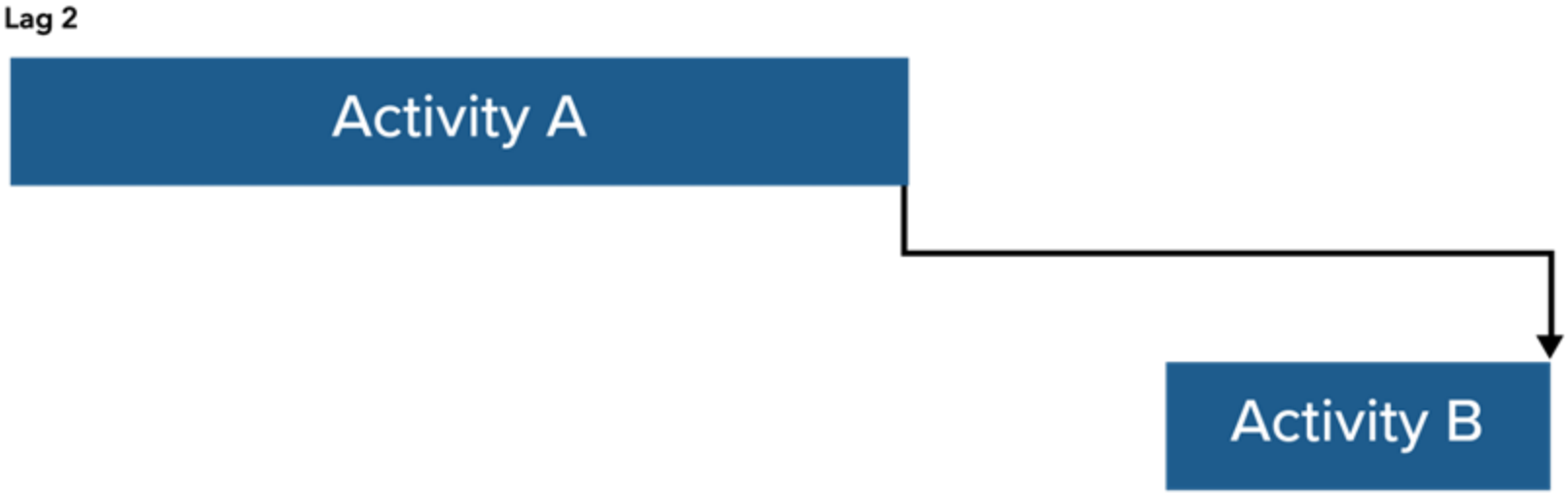


Start-to-Start

Finish-to-Finish

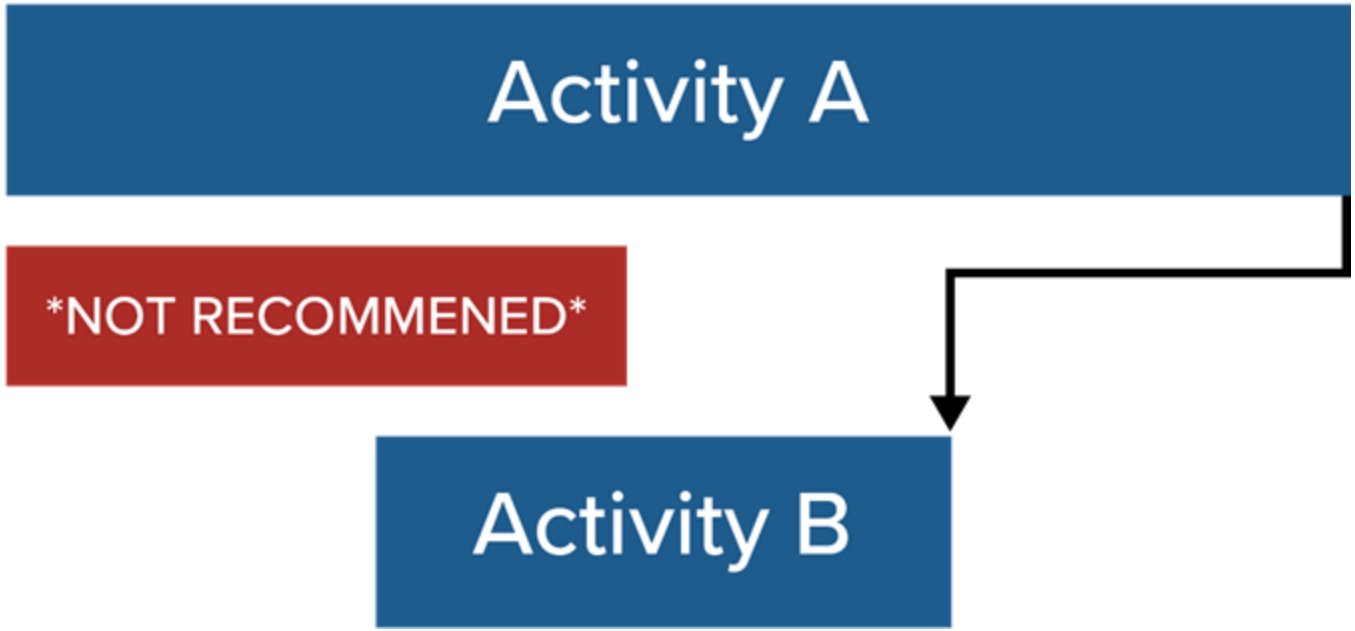
Lag 0

Finish-to-Finish



Finish-to-Finish

Lag -2

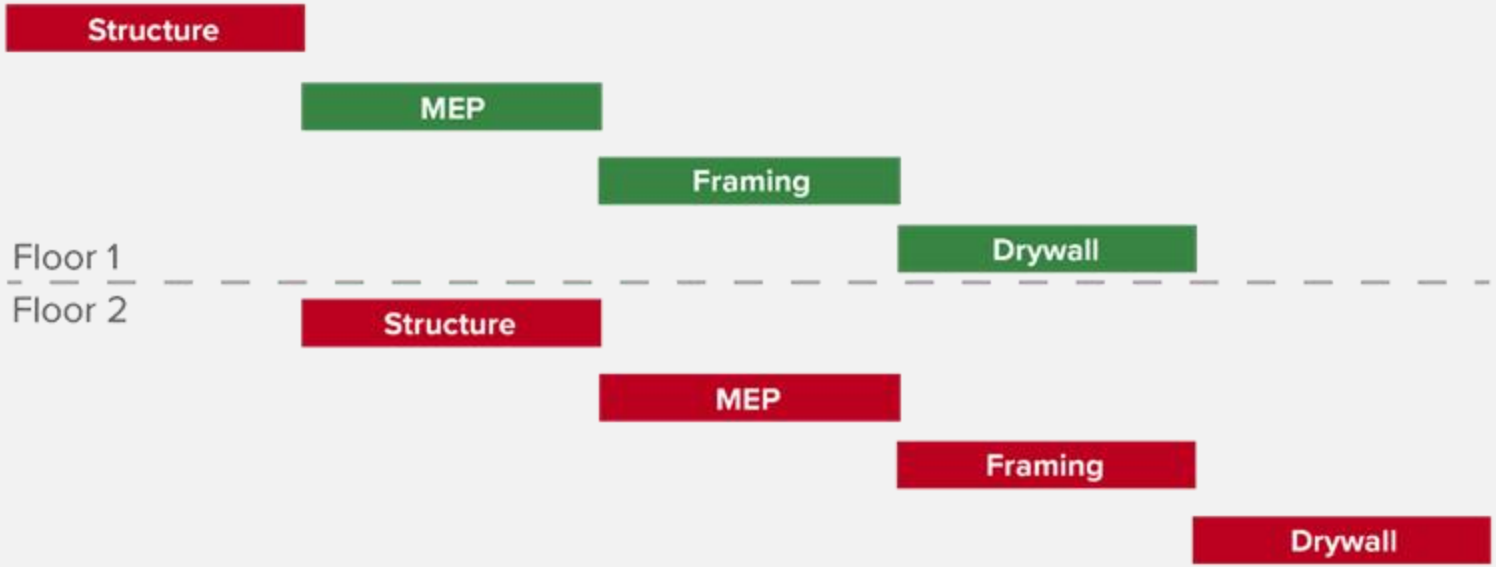


How to Build a Solid Plan & Schedule

- **Step 6:** Apply Necessary Constraints (Date, Crew, Calendars, etc.)

What is Hard and Crew Logic?

Both Hard & Crew Logic are required for useful schedules:



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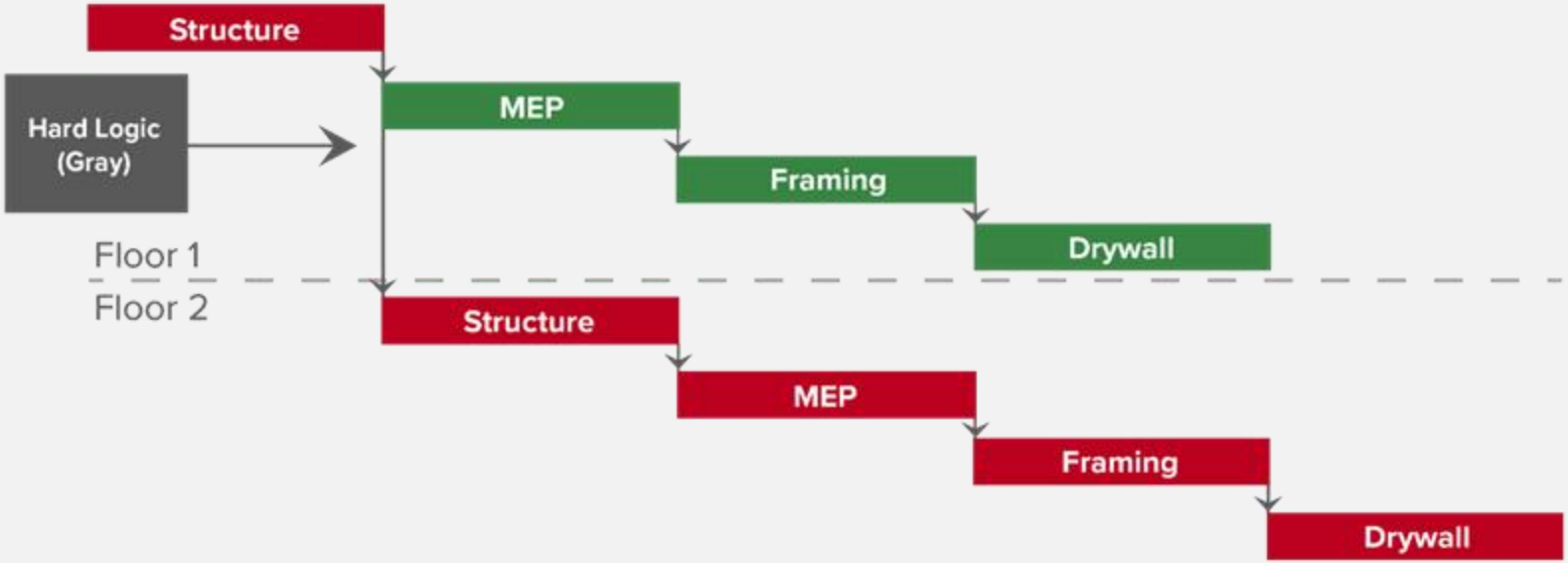
Hard logic represents logic that cannot happen any other way, i.e., MEP can't begin until the structure is complete.



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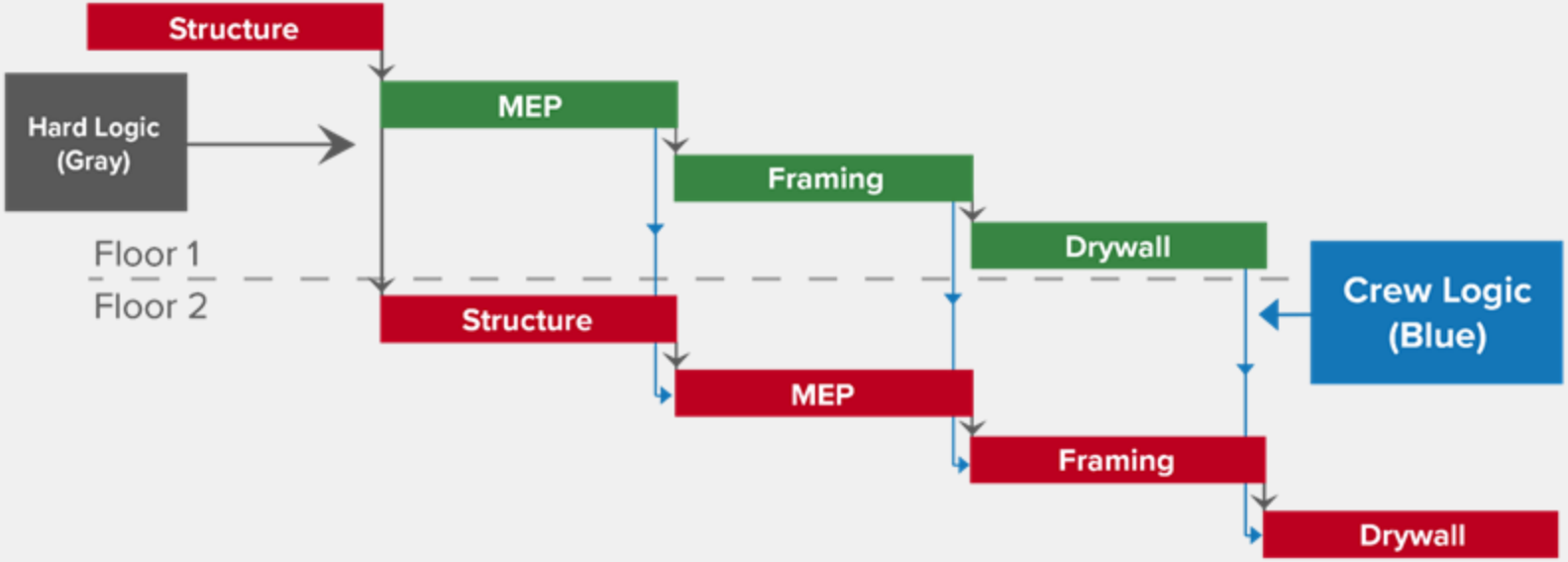
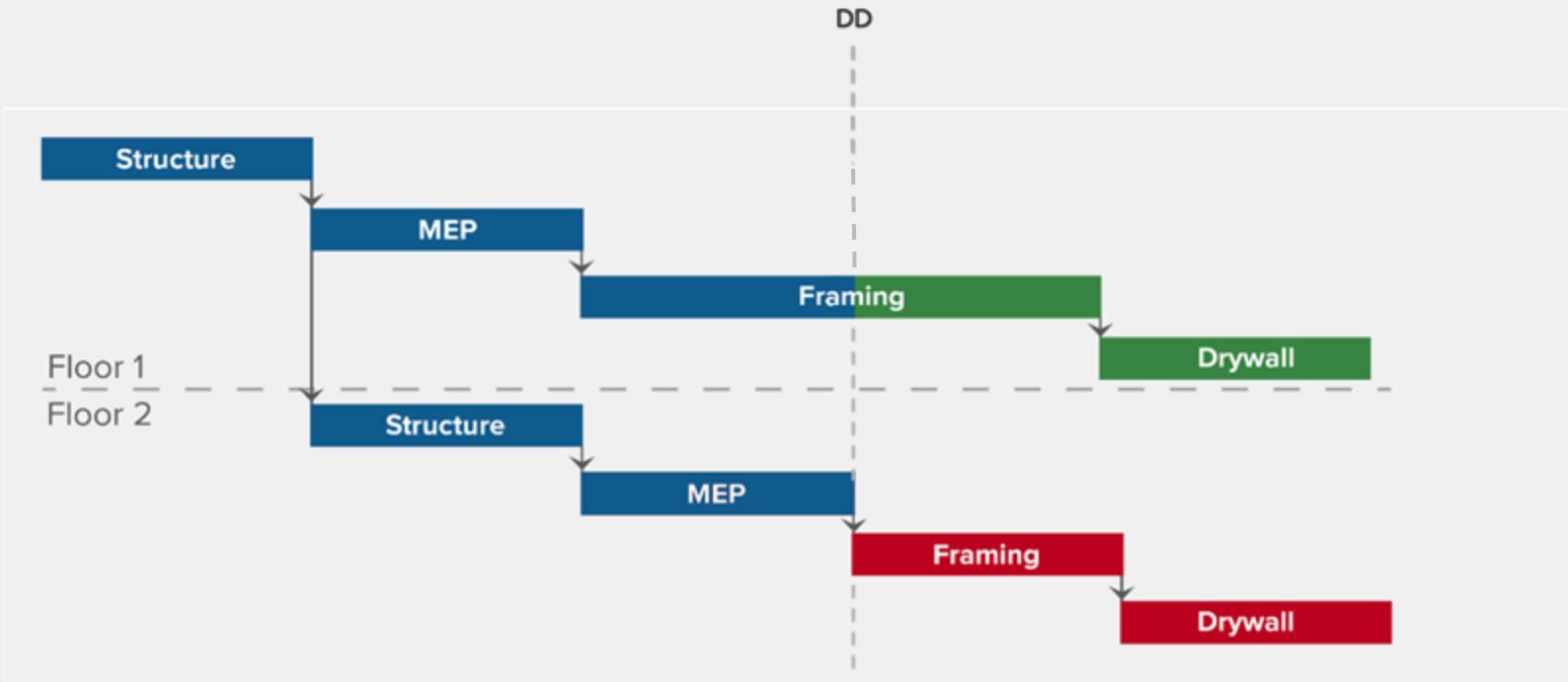


Crew logic represents logic that is 100% based on crew restraints, i.e., site teams cannot begin MEP on the second floor until it is completed on the first floor.

Importance of Crew Logic

Due to the reality of resources & crew restraints, trades can stack upon delays without crew logic.



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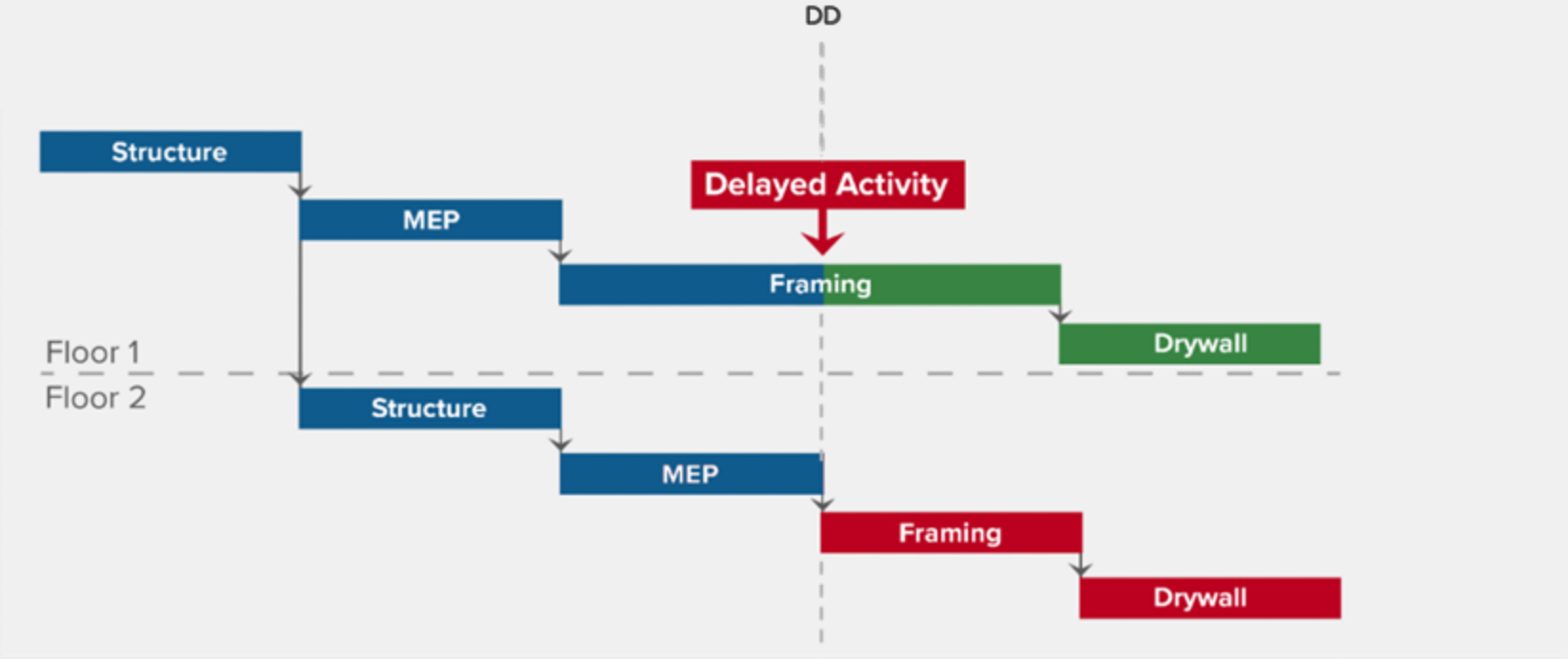
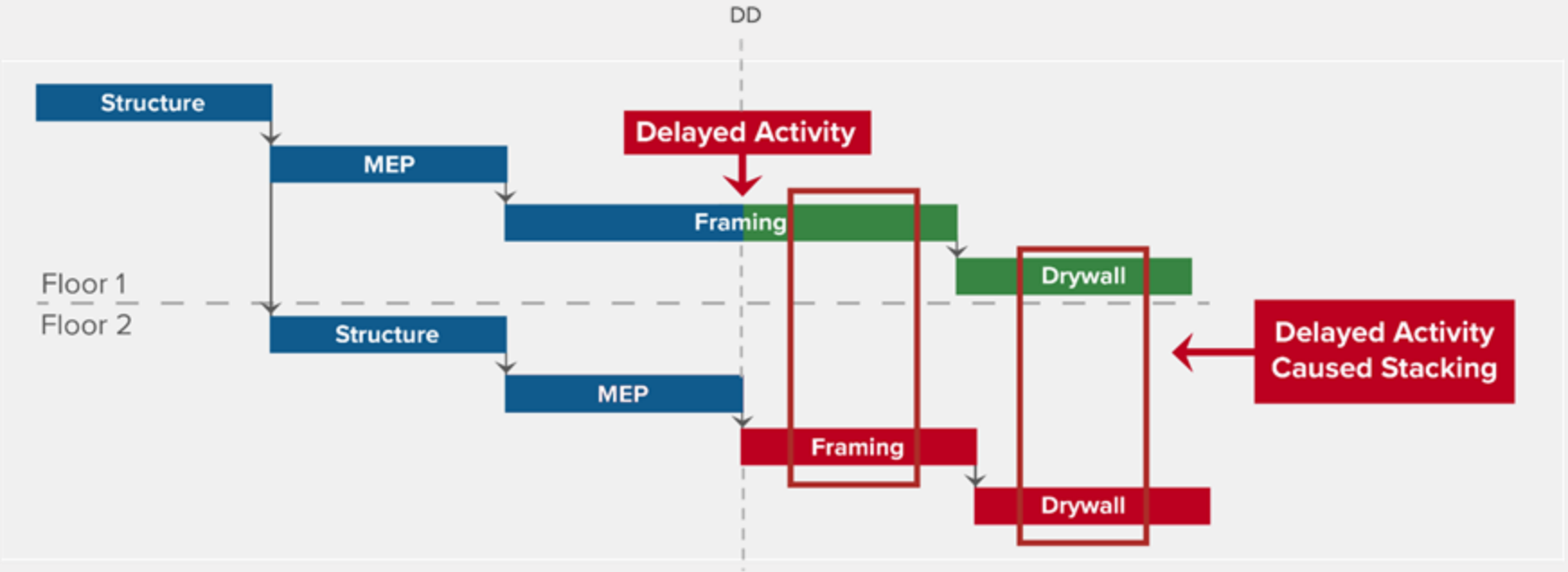


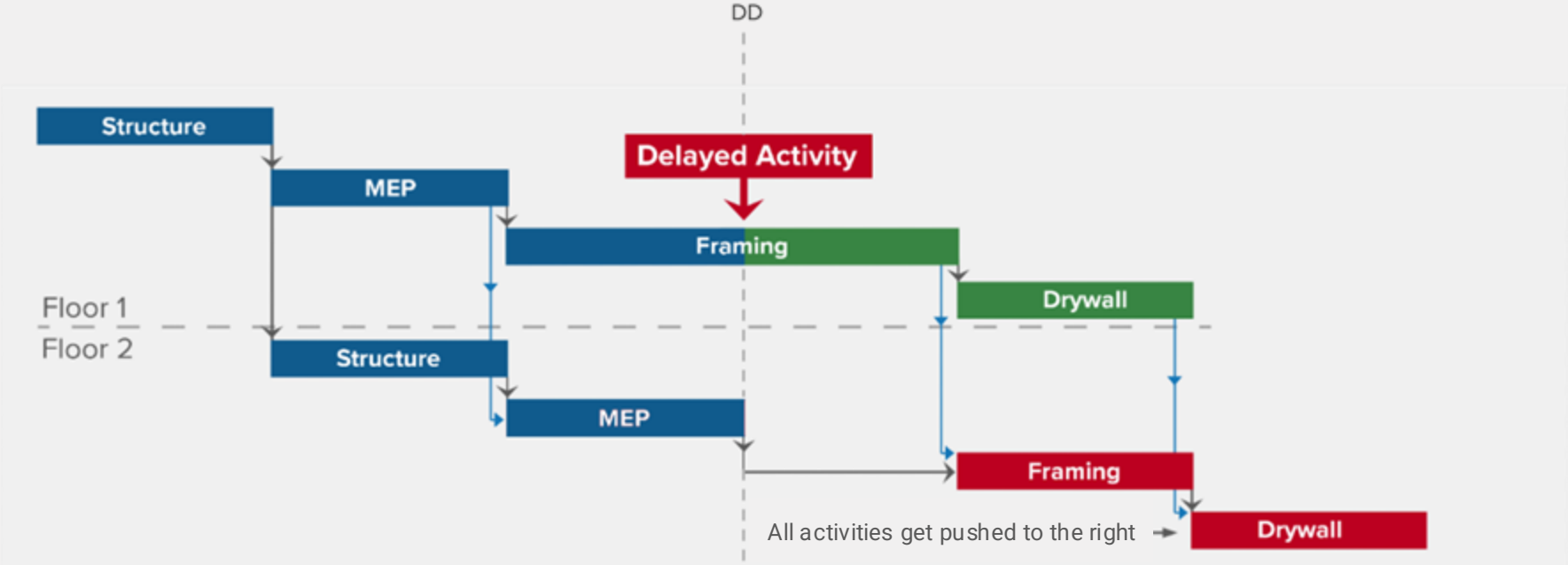
Trade Stacking Occurs Without Crew Logic

The delayed activity caused activities to stack on one another, which requires multiple crews to be on
schedule.

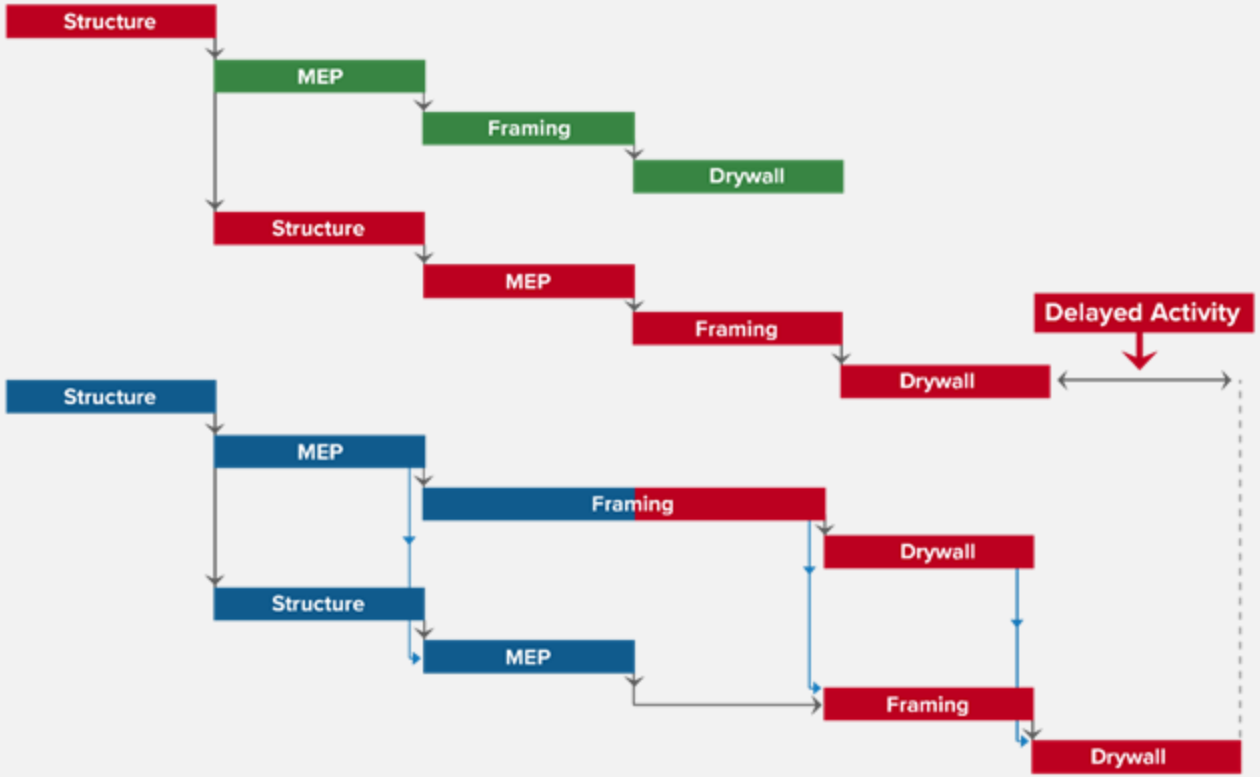


Crew Logic Prevents Trade Stacking

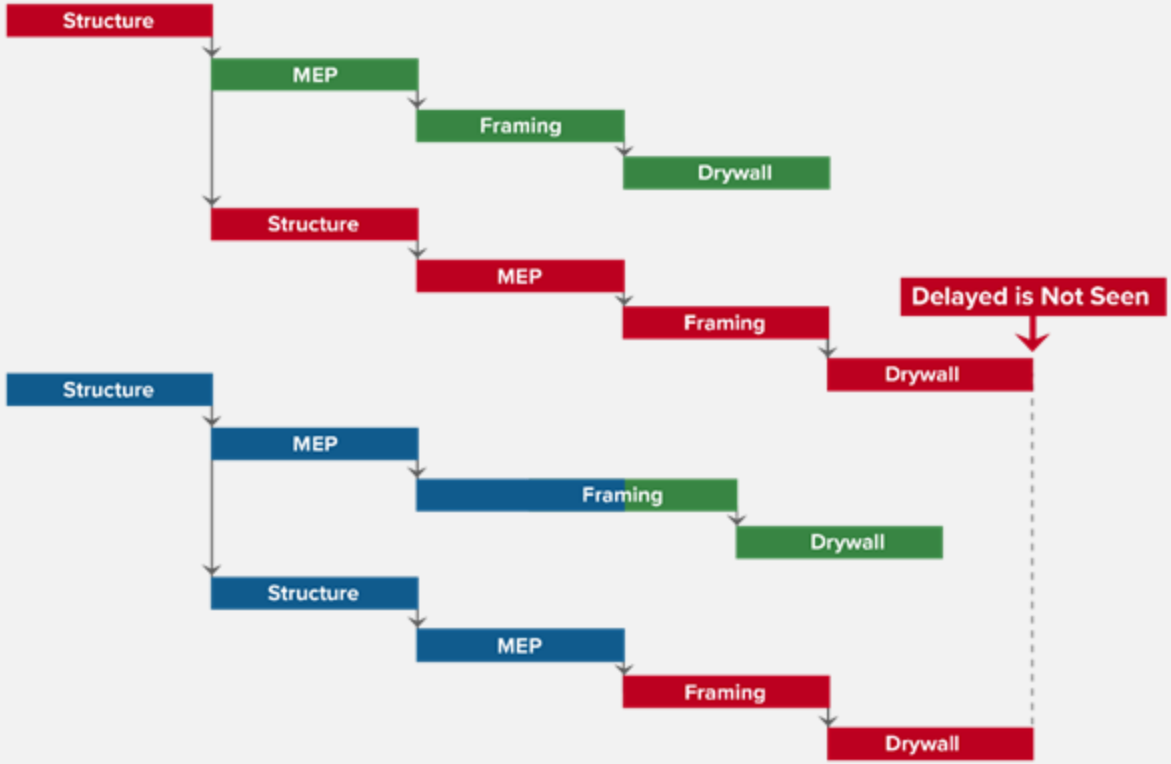
With crew logic, impacts become clear, and crew restraints are reflected in the plan –making the schedule reactive and allowing the site teams to see the potential consequences of delay.



With Crew Logic, Impacts are Clear



Without Crew Logic, Impacts are Not



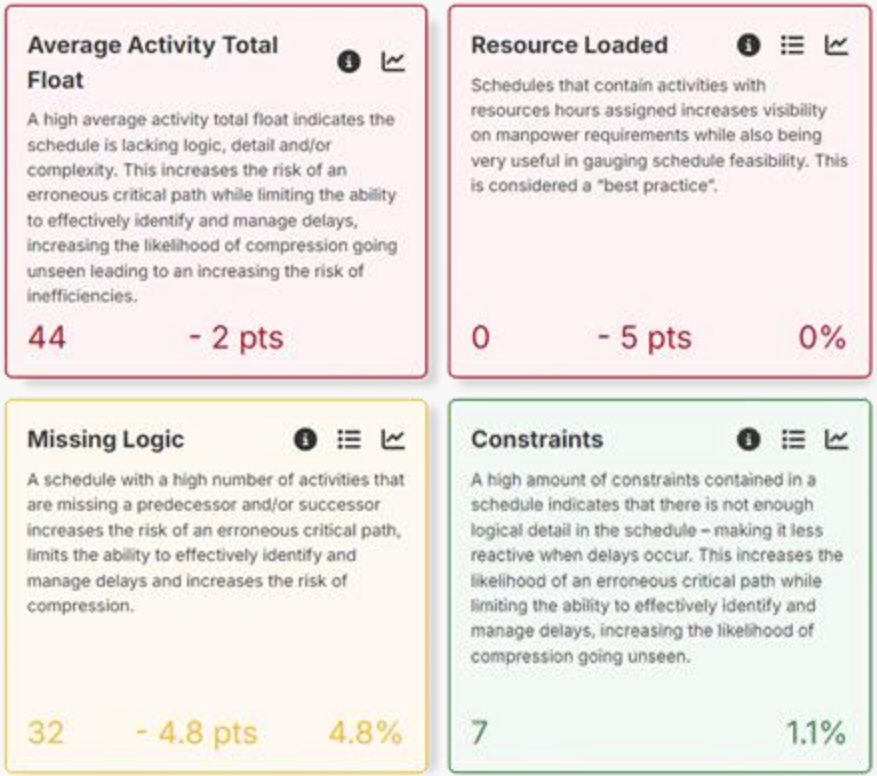
Schedule “Quality” is…

Schedule quality is how well a schedule is built, not just if the durations are correct.

Best Practices for Creating a Quality Schedule:

- Sufficient Detail
- All necessary logic
- Fairly Accurate Durations

Without Schedule Quality, the Critical Path is likely off and the schedule becomes misleading.

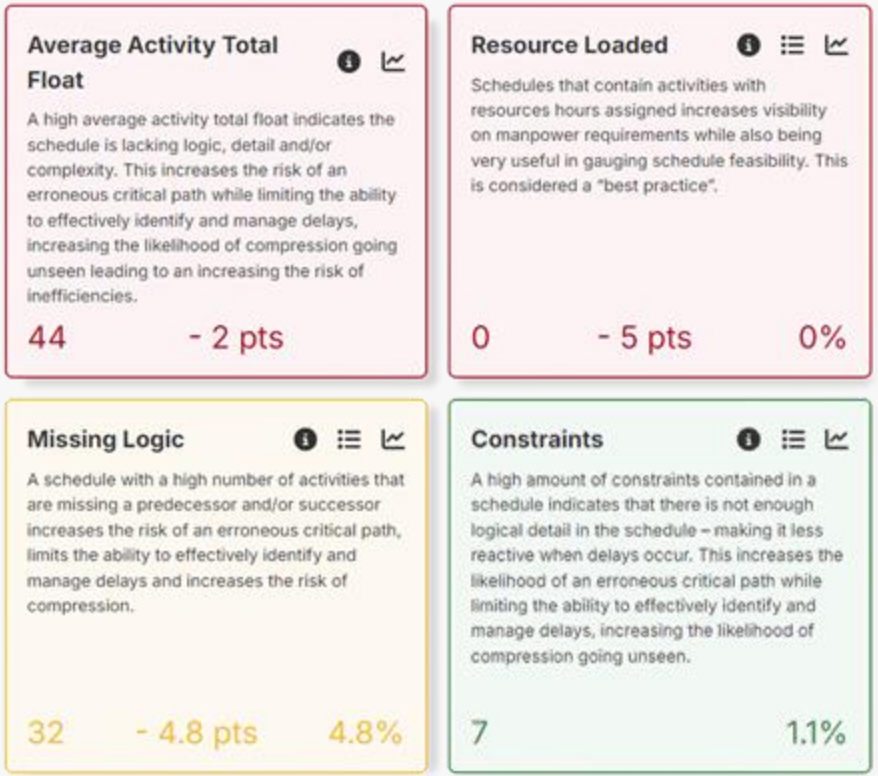


Core Concepts: Schedule Quality

Redefining Schedule Quality

Schedule Quality is NOT…

- A measurement of the overall “health” of your project
- A guarantee that your project is going to be completed as scheduled
- One-size-fits-all
- A grade that should be taken at face value



Driving Indicators of Schedule Quality

Total Activities	110	
Milestones	4	
Activities	106	
Total Relationships	228	2.1:1
Finish to Start	222	97.4%
Start to Start	5	2.2%
Finish to Finish	1	0.4%
Start to Finish	0	0.0%
Missing Logic	5	4.5%
Negative Lag	26	11.4%
Positive Lag	0	0.0%
Constraints	0	0.0%

High Float Activities	49	44.5%
High Duration Activities	0	0.0%
Resource Loaded Activities	0	0.0%
Critical Path %	31	28.2%
Avg. Activity Total Float		51

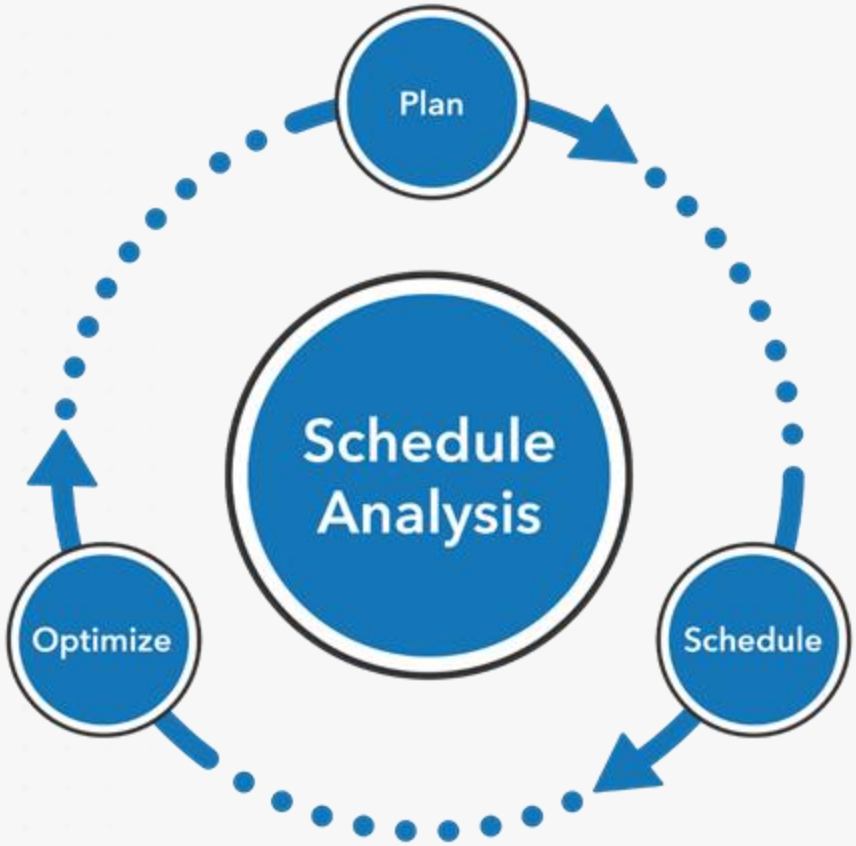
Missing Logic

Constraints

High Duration Activities

Note: These three factors are the root of all other schedule quality issues. For more information, Google 'DCMA' +

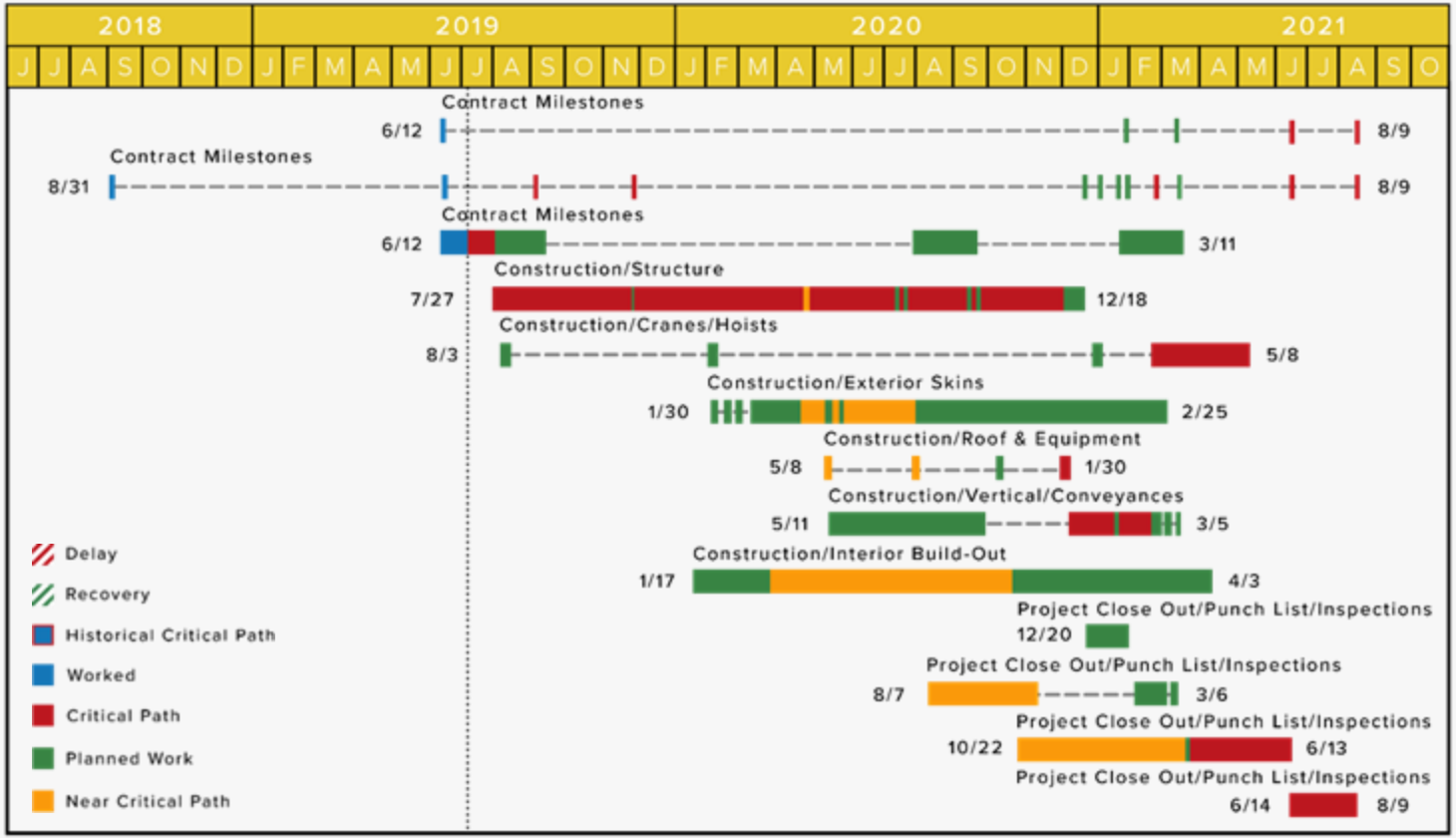
Planning vs Scheduling



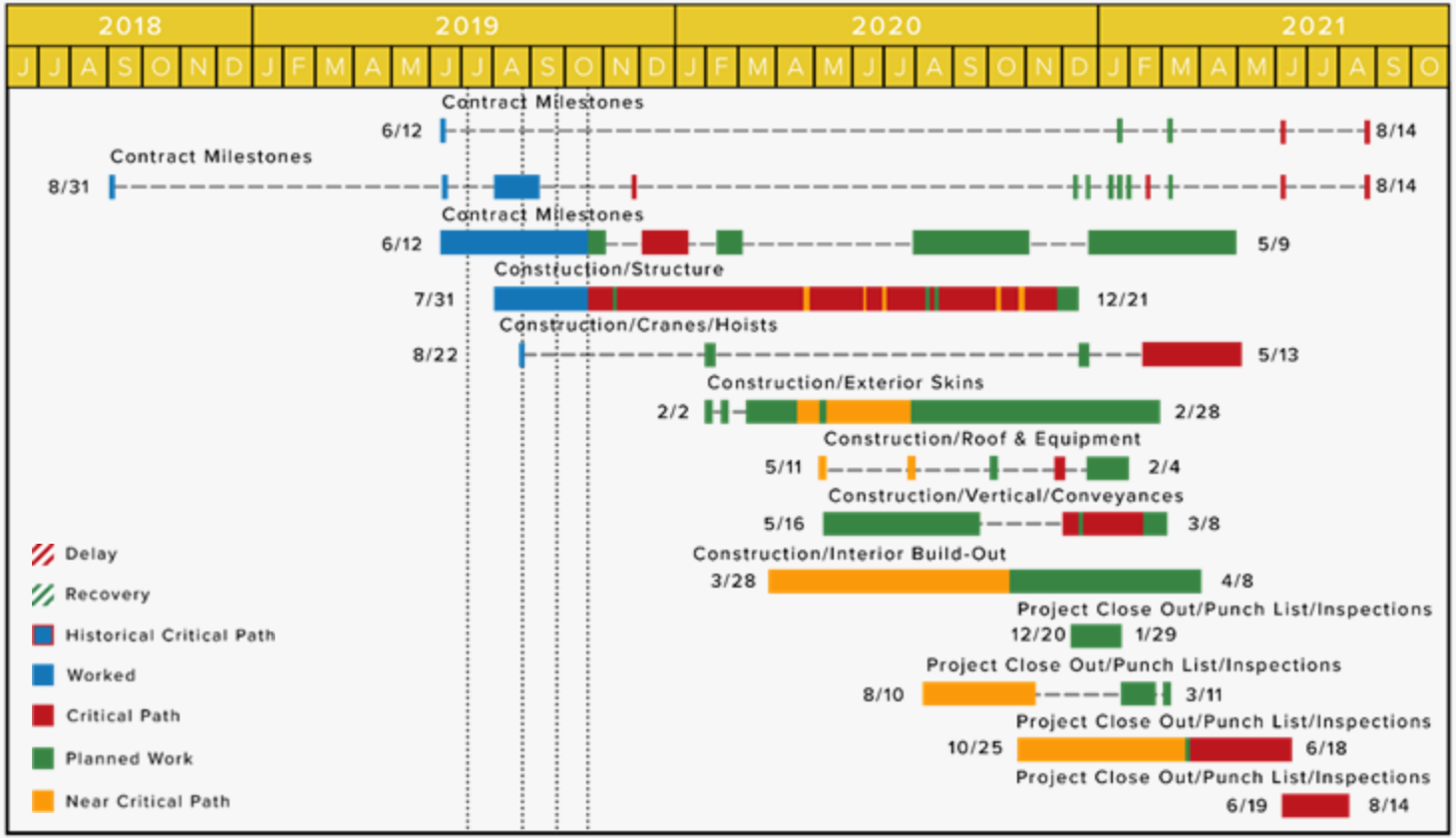
The Importance of Schedule Updating

- All parties must be informed of the project status.
- Things change, and you must incorporate those changes into the schedule.
- The Critical Path is dynamic, and resources might need reprioritization.
- It is a valuable tool for gauging performance & reviewing payment applications.

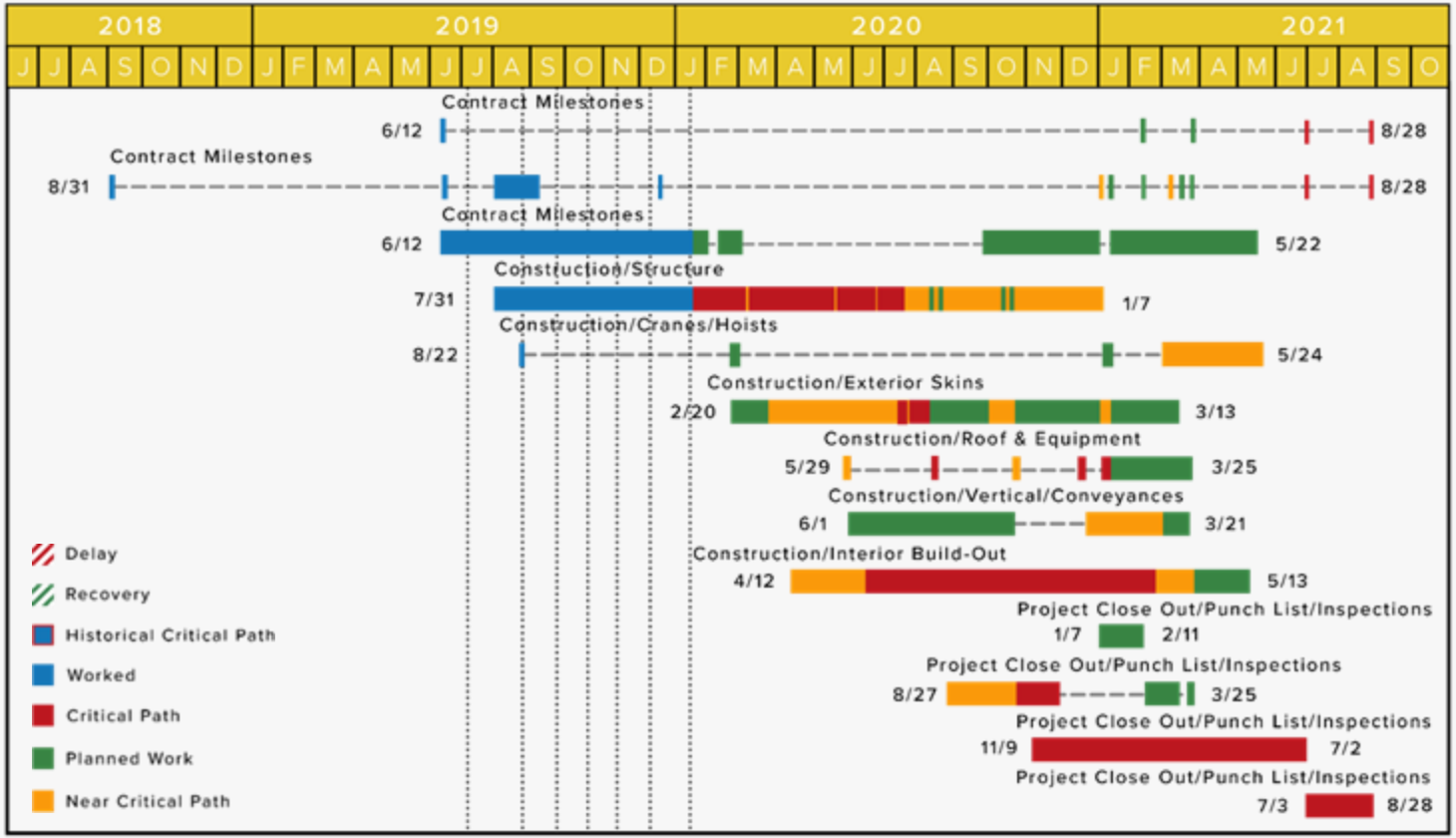
The Importance of Schedule Updating: Baseline



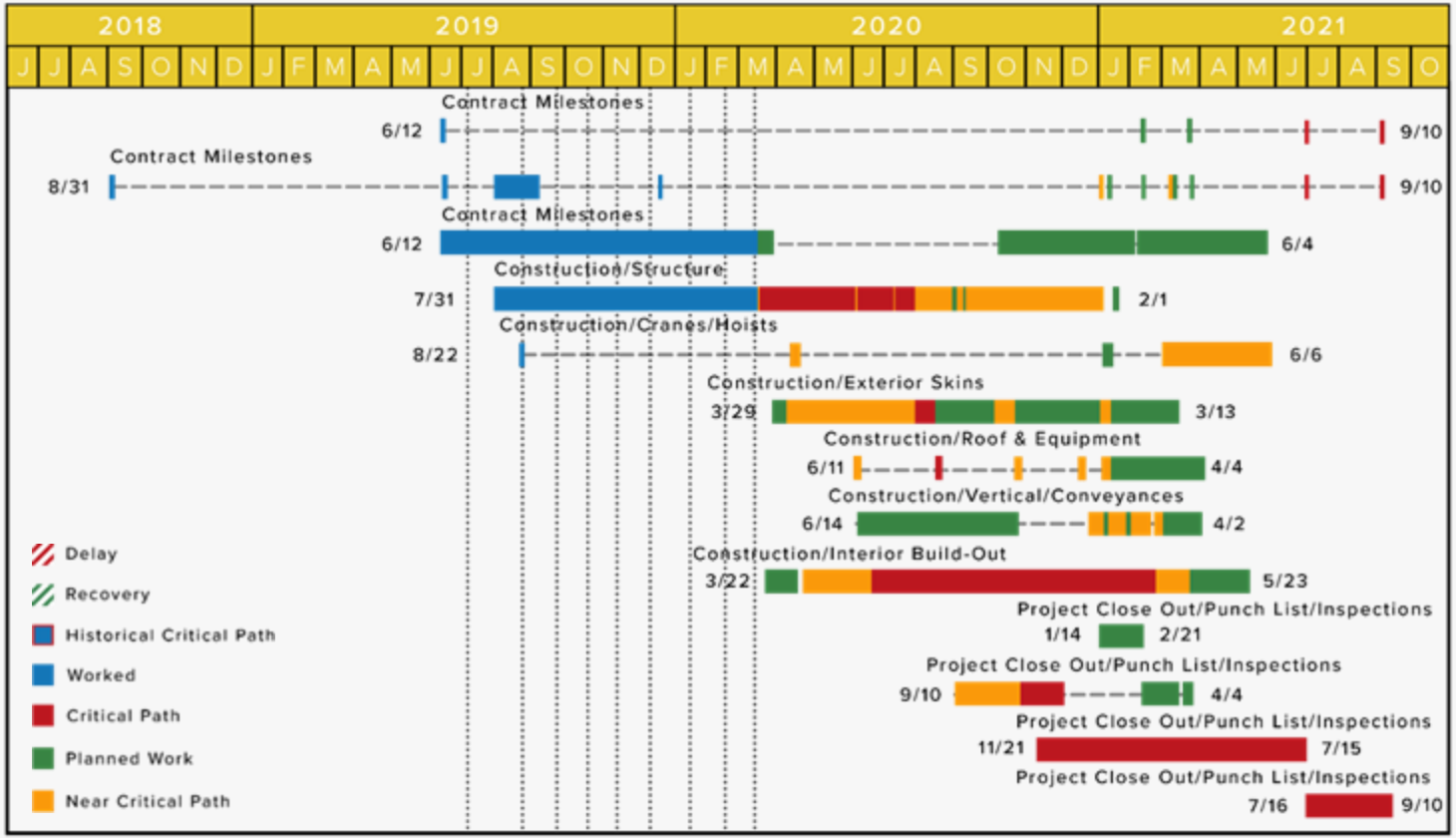
The Importance of Schedule Updating: Update 3



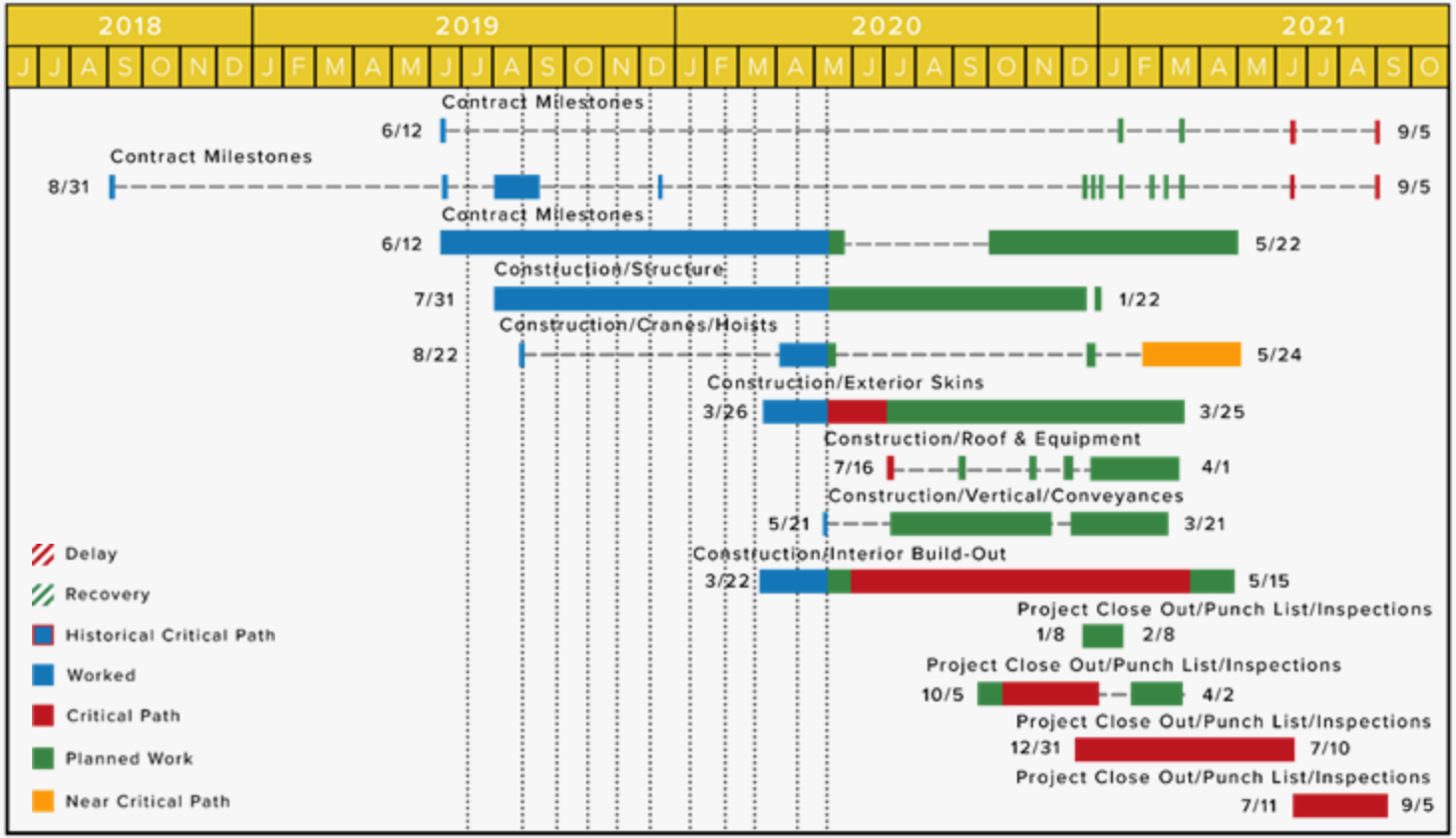
The Importance of Schedule Updating: Update 6



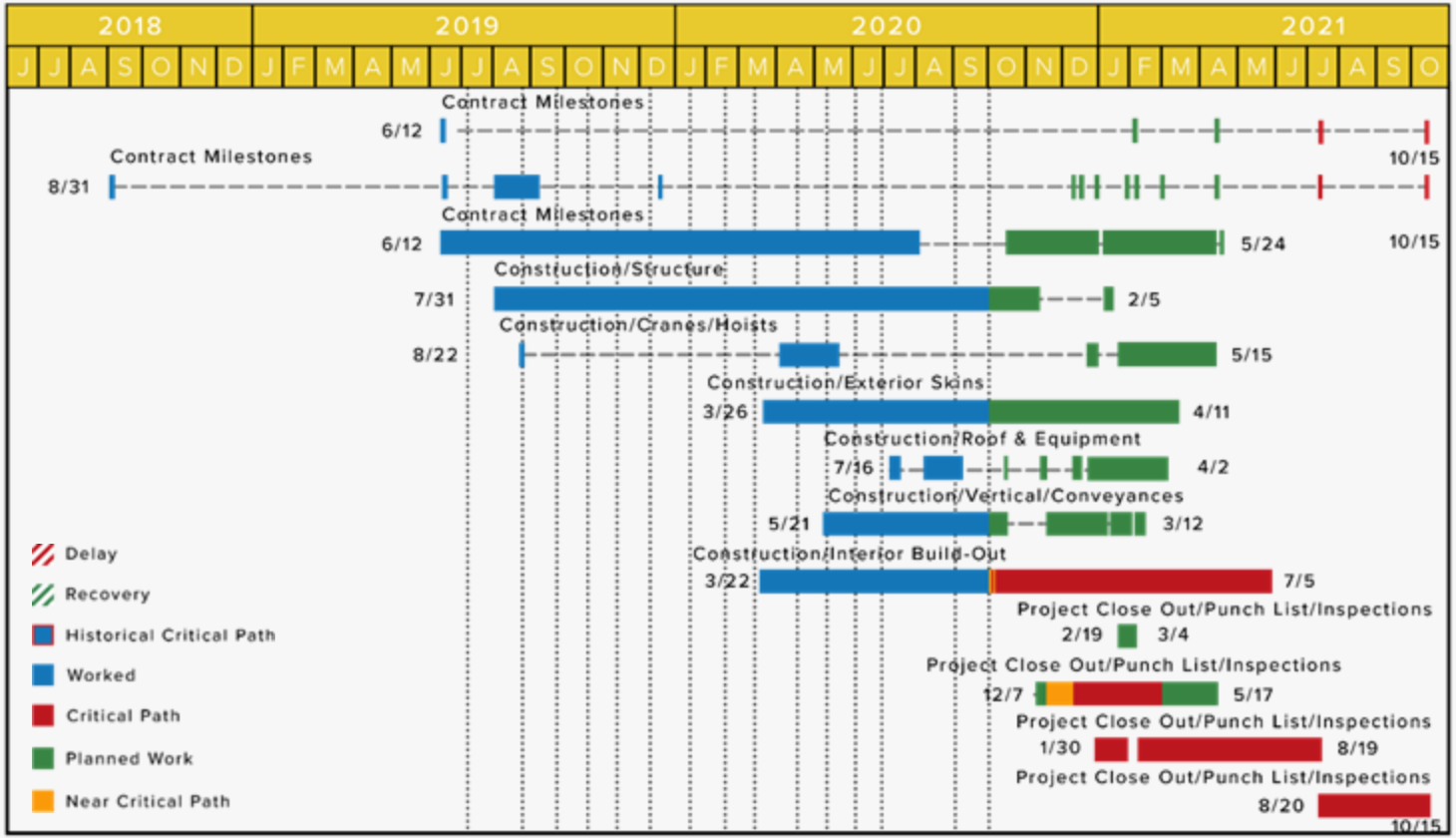
The Importance of Schedule Updating: Update 8



The Importance of Schedule Updating: Update 10



The Importance of Schedule Updating: Update 14



The Schedule Updating Process

Step 1: Walk the site & status the job.

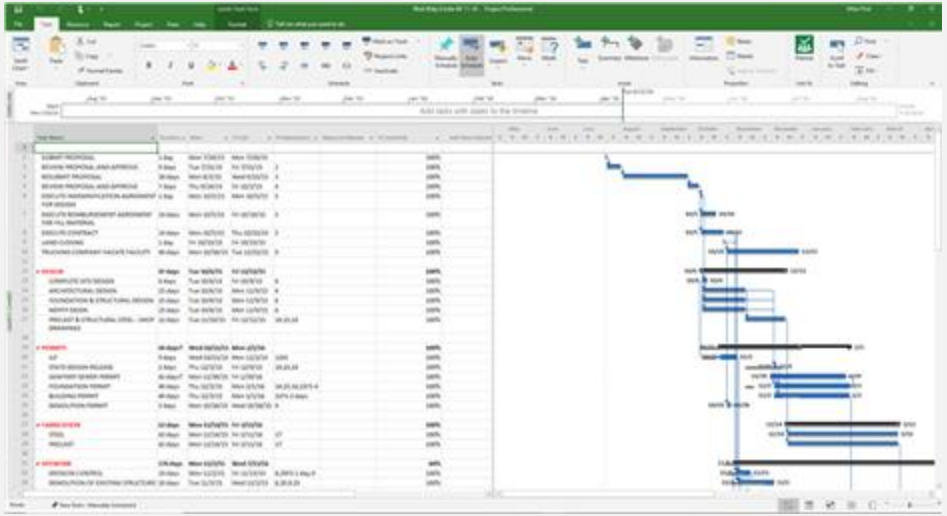
- Identify areas where schedule changes may be necessary or useful.
- Discuss changes with relevant parties to determine the best approach for schedule changes.
- Modify the schedule to reflect changes based on decisions made in working sessions.
- Make sure schedule quality is maintained after changes are made.
- Publish the schedule and notify all relevant parties of the changes made.

PRO TIP: Save a second copy with changes as the schedule that will be submitted for approval. Do not delete the “Status Only Update.”

The Schedule Updating Process

Step 2: Update the project schedule with information obtained on the site walk.

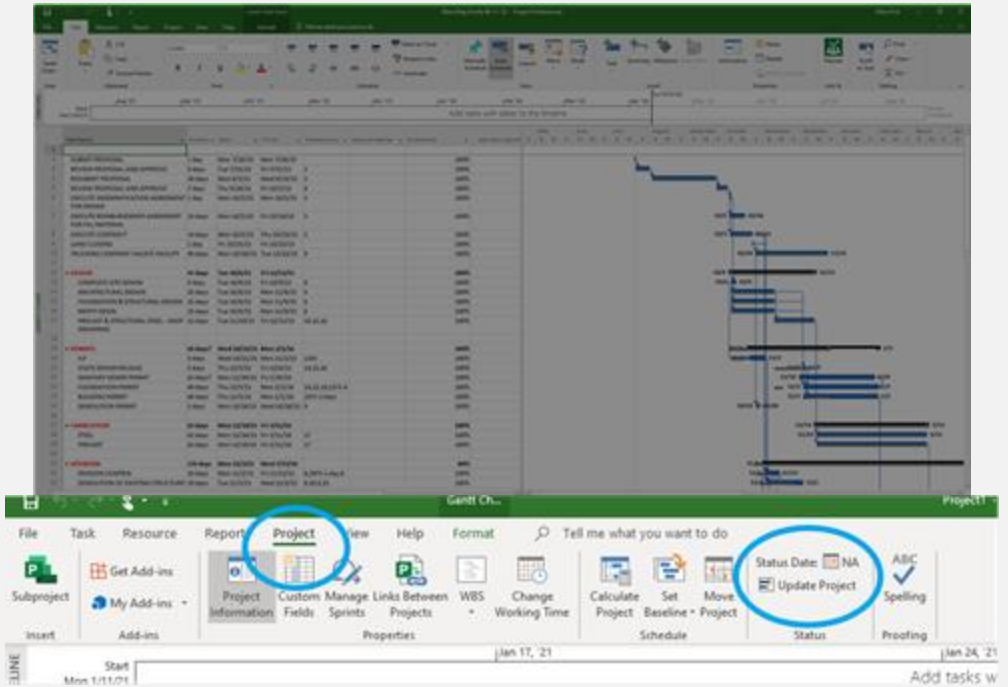
- Log all Start Dates, Finish Dates, & Percent Completes.
- Double-check that all data is entered accurately.
- Update the schedule status date to the current date.
- Project → Update Project



The Schedule Updating Process

Step 2: Update the project schedule with information obtained on the site walk.

- Log all Start Dates, Finish Dates, & Percent Completes.
- Double-check that all data is entered accurately.
- Update the schedule status date to the current date.
- Project → Update Project

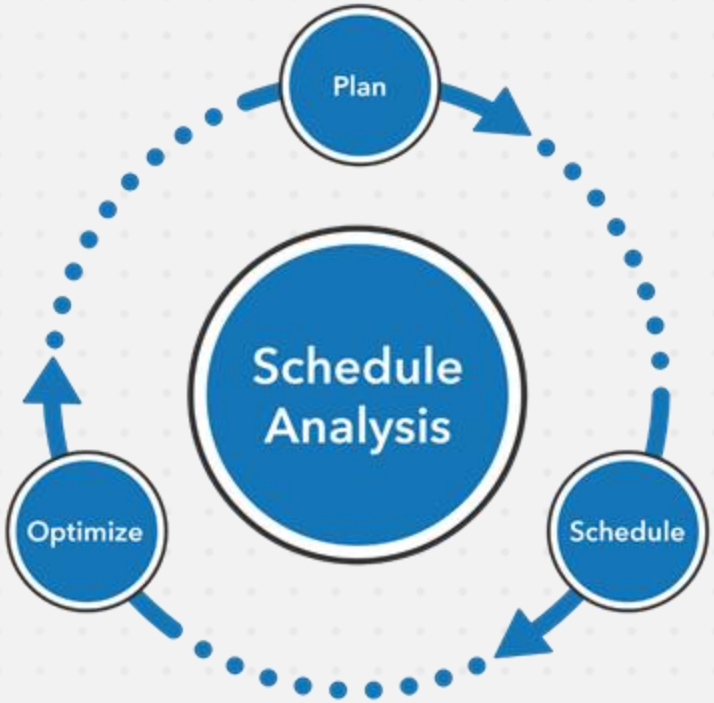


PRO TIP: Save a copy of the schedule update before making changes (Status Only Update). This will help analyze delay via a "Half Step" process – more on that in the next session.

The Schedule Updating Process

Step 3: Identify & Incorporate any Changes Necessary

- Identify areas where schedule changes may be necessary or useful.
- Discuss changes with relevant parties to determine the best approach for schedule changes.
- Modify the schedule to reflect changes based on decisions made in working sessions.
- Make sure schedule quality is maintained after changes are made.
- Publish the schedule and notify all relevant parties of the changes made.



PRO TIP: Save a second copy with changes as the schedule that will be submitted for approval. Do not delete the “Status Only Update.”

To Change or Not to Change?

Changes are rarely made to reflect reality. Instead, they are made with hopes of overcoming delays or adding detail due to change orders. Therefore, monitor this process very closely.

Schedule Update Review Process

Ensure Schedule Quality is maintained. If not, be sure it is repaired before moving forward.

Consider incorporating other checks into your schedule quality/compliance process (other than DCMA 14 pt check).

- Backdated Activities
- Changed Actual Dates
- Decreased Percent Completes
- Started with 0% Complete
- Future Actual Dates
- Missing Actual Finish Dates

Schedule Update Review Process

Seek out and study changes– from the former to the current schedule– made to critical and near-critical tasks, focusing on:

Schedule Update Review Process

- Determine if–and why–the Critical Path has shifted to a different area/trade than outlined in the previous update.
- Assess the level of compression incorporated into the current schedule.
- Make sure the schedule passes the ‘gut’ check.
- These suggestions ensure the schedule remains feasible.

Schedule Update Review Process

The schedule will likely contain an erroneous critical path, making the project prone to mismanagement of resources.

The schedule will likely become overly compressed, resulting in inefficiencies amongst trades, resulting in poor quality work and/or claims.

The project will be more delayed, and nobody will realize it or understand why.

Contractors and owners will begin arguing about the projected end date and who is responsible for the problems.

The project will end up late & over budget.

Schedule Update Do’s and Don’t

Do’s

- Use detailed activity descriptions
- Use clear logic ties between activities
- Validate calendars and work hours
- Make sure constraints are justified
- Review longest path and near critical
- Break down long activities
- Group activities by area
- Make sure float makes sense
- Use naming conventions
- Have a consistent update process

Don’ts

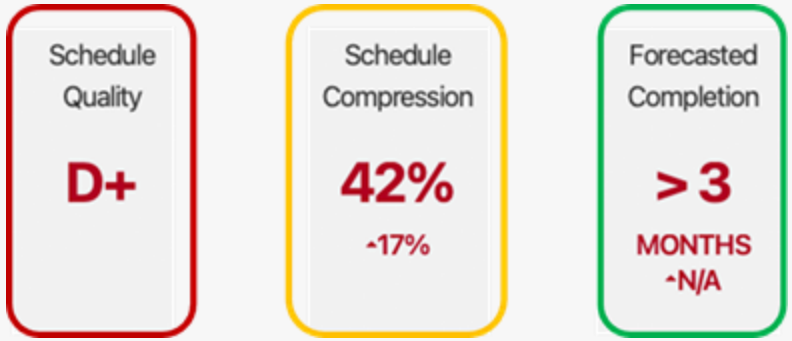
- Don’t use vague descriptions
- Don’t leave activities dangling
- Don’t use unnecessary constraints
- Don’t use different calendars without reason
- Don’t have extremely long activities
- Don’t hide delays with constraints
- Don’t ignore changes to the critical path
- Don’t leave logic broken after updates
- Don’t assign excessive float
- Don’t update without documentation

Schedule Oversight and Analytics Categories

- Schedule Quality
- Schedule Recovery
- Schedule Delay
- Schedule Feasibility

Interdependent Analysis Cycle

Key Performance Metrics to Track



Schedule Quality

Highlights the level at which best practices have been incorporated into the schedule.

Schedule Compression

A comparison of planned work scope vs. current work scope in the remaining duration of the project.

Forecasted Completion

Completion date variance is calculated using historical trends.

Core Concept: Compression

Acceleration Example

Baseline

Core Concept: Compression

Acceleration Example

Baseline

20 Days of Total Duration to complete 20 Activity Days worth of work

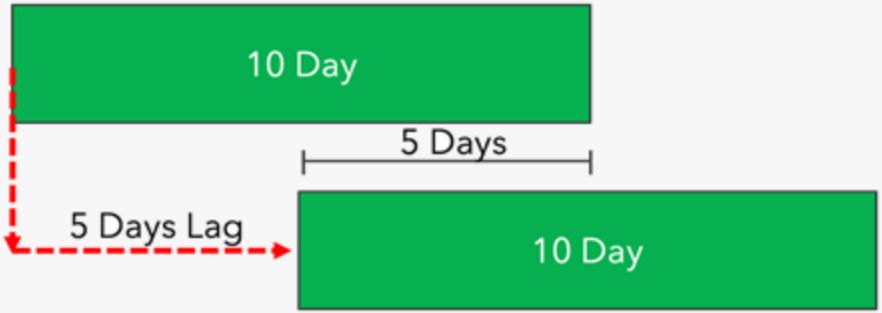
Core Concept: Compression

Acceleration Example

Baseline

20 Days of Total Duration to complete 20 Activity Days worth of work

Update 1



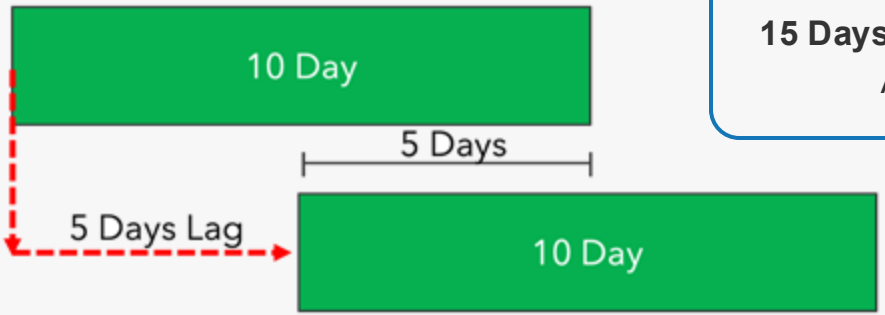
Core Concept: Compression

Acceleration Example

Baseline

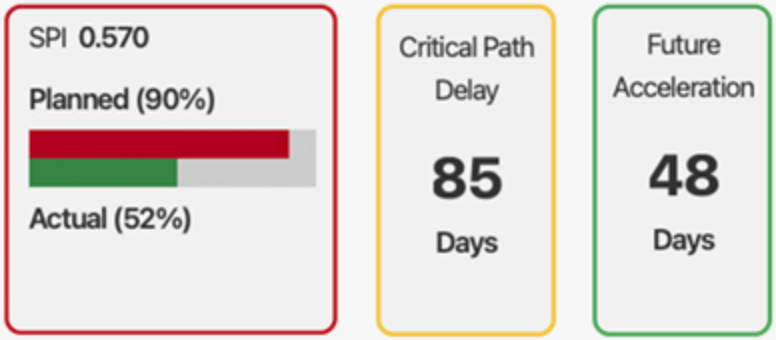
20 Days of Total Duration to complete 20 Activity Days worth of work

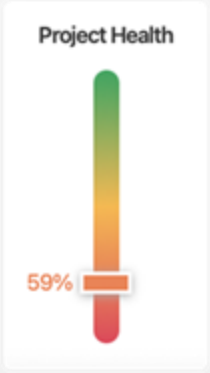
Update 1



15 Days of Total Duration to complete 20 Activity Days worth of work

Key Performance Metrics to Track





Project Health

Index factoring in SPI, Schedule Quality, and Compression.

Schedule Performance

Total summation of acceleration days that have been incorporated across all updated periods through changes to the schedule.

Critical Path Delay

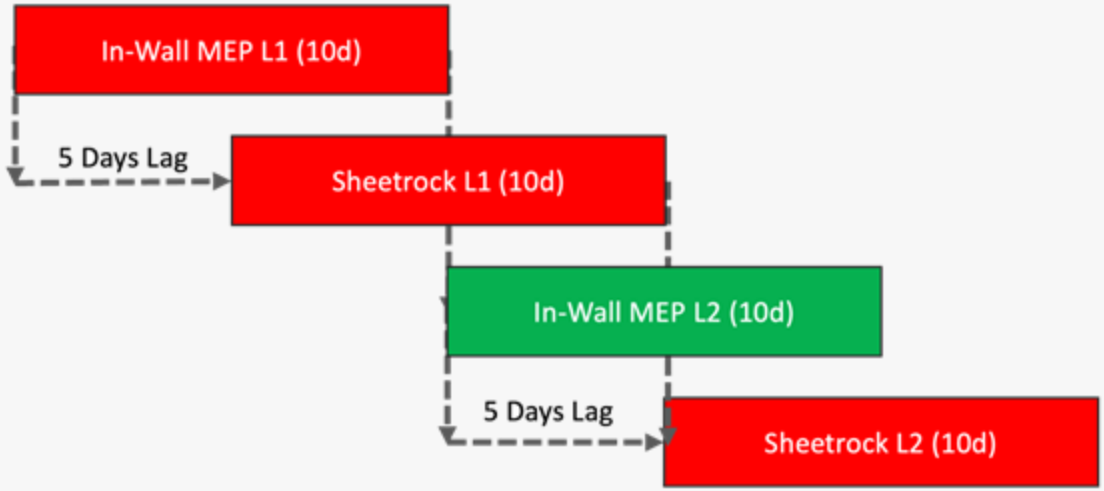
A comparison of planned work scope vs. current work scope in the remaining duration of the project.

Future Acceleration

Completion date variance is calculated using historical trends.

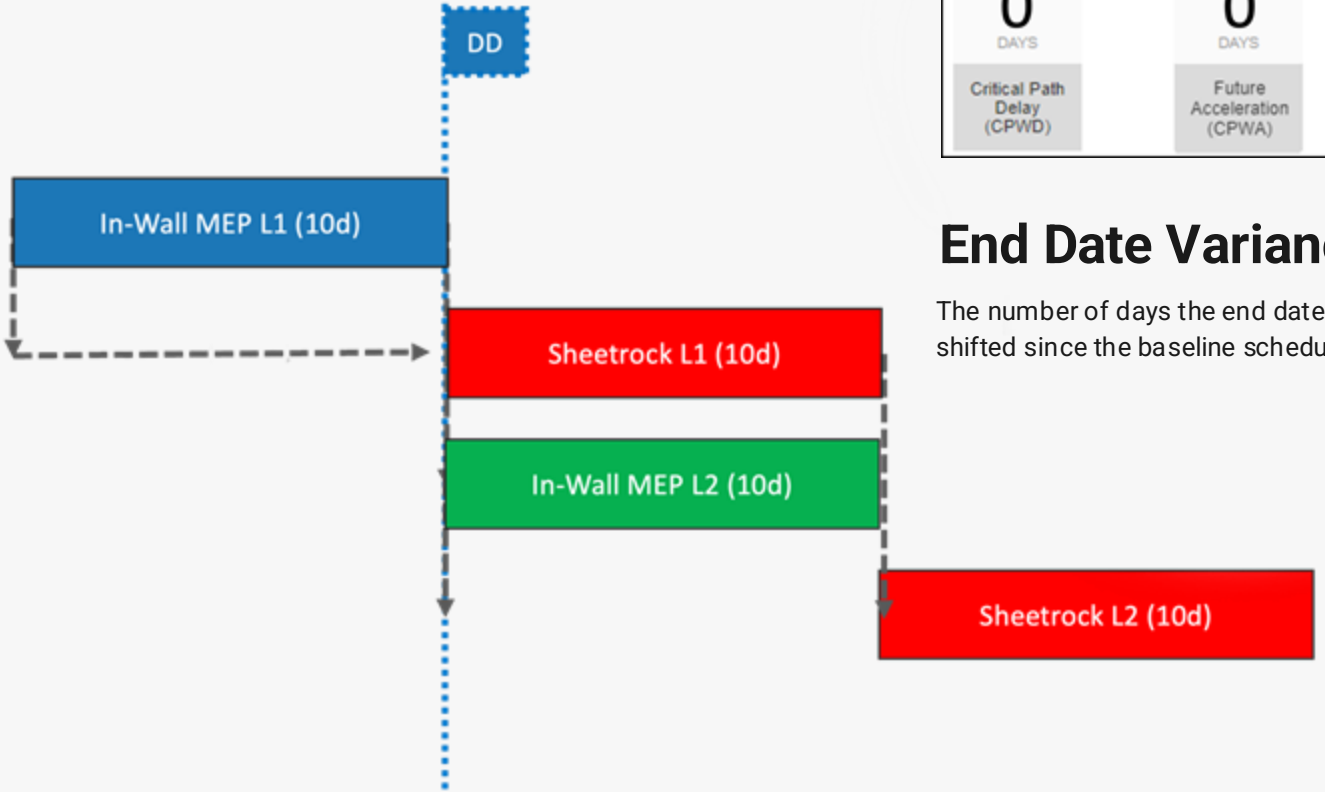
End Date Variance

Actual Delay and Planned Acceleration Example



End Date Variance

Actual Delay and Planned Acceleration Example

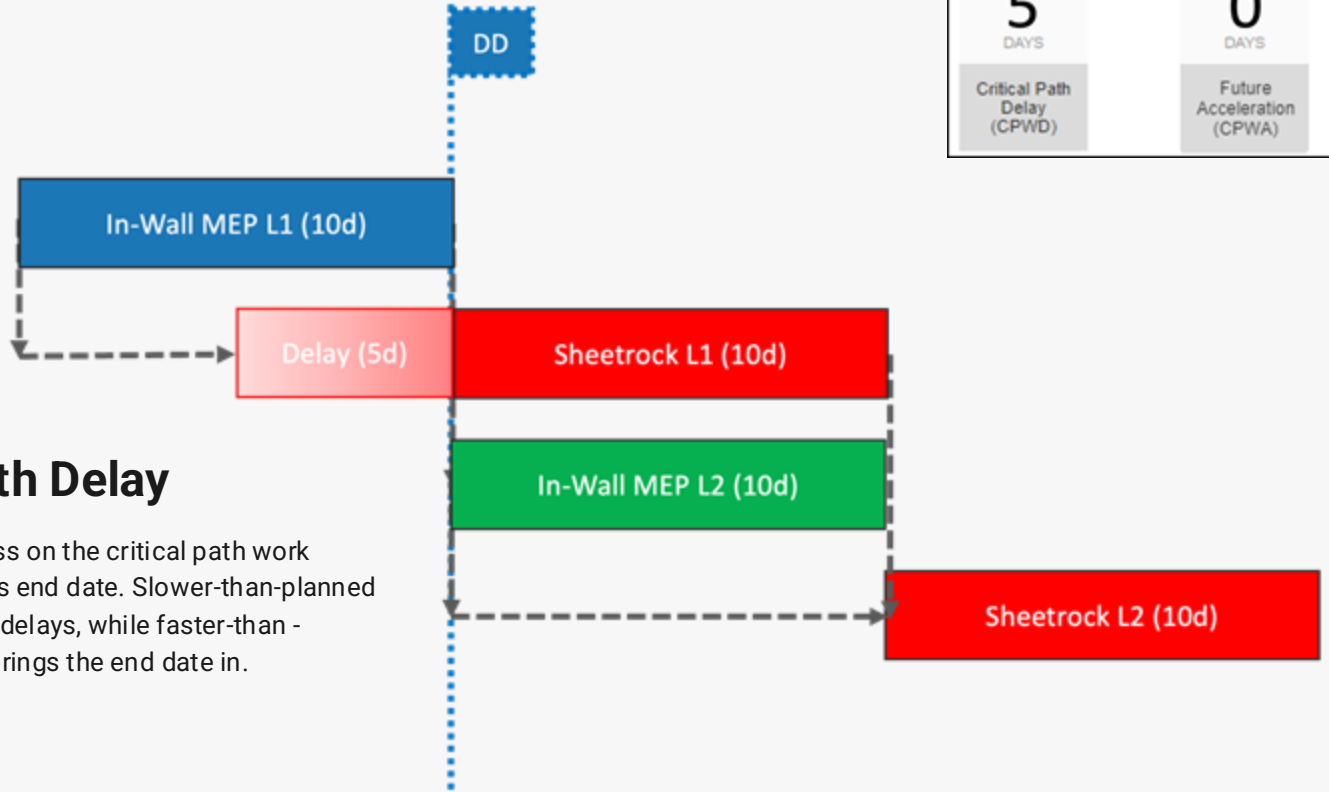


End Date Variance

The number of days the end date has shifted since the baseline schedule.

End Date Variance

Actual Delay and Planned Acceleration Example

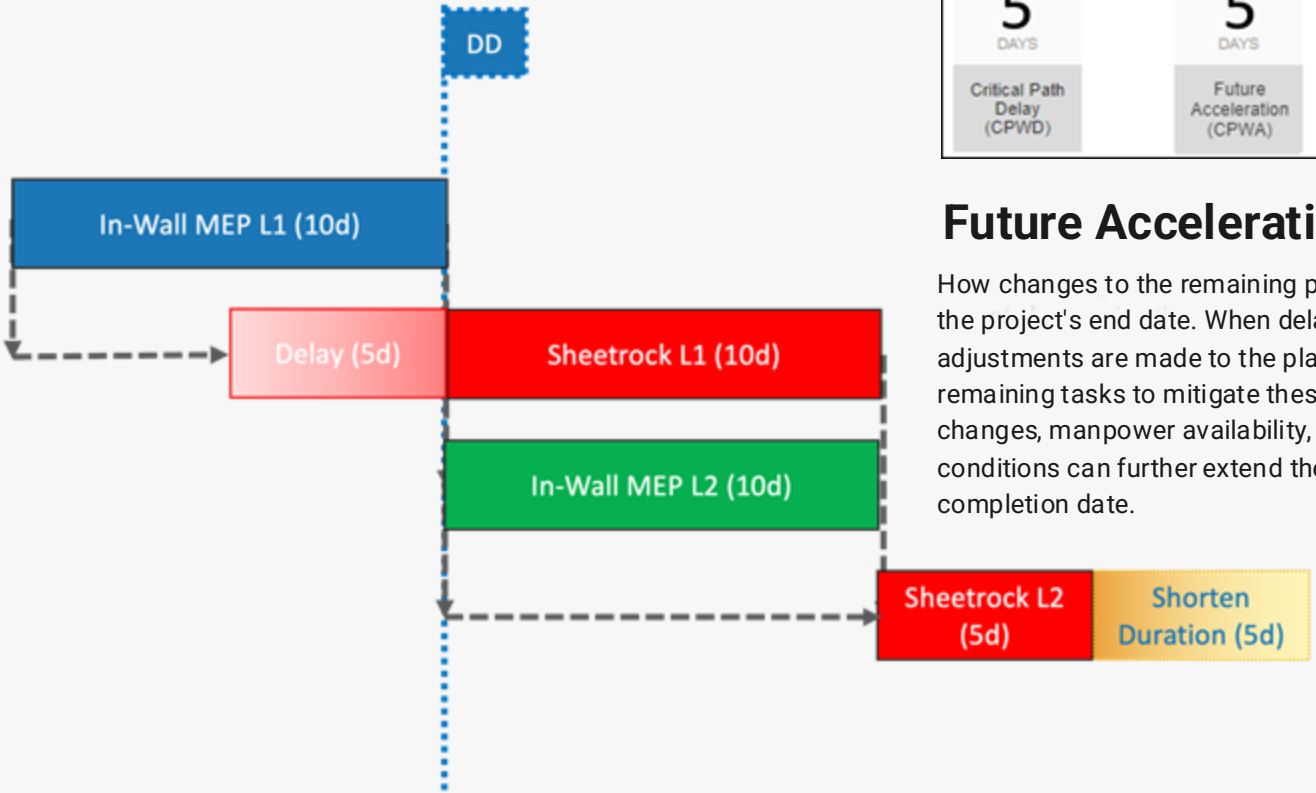


Critical Path Delay

How actual progress on the critical path work affects the project's end date. Slower-than-planned progress results in delays, while faster-than - planned progress brings the end date in.

End Date Variance

Actual Delay and Planned Acceleration Example



Future Acceleration

How changes to the remaining planned work affect the project's end date. When delays occur, adjustments are made to the planned execution of remaining tasks to mitigate these delays. Design changes, manpower availability, or unforeseen conditions can further extend the project's completion date.

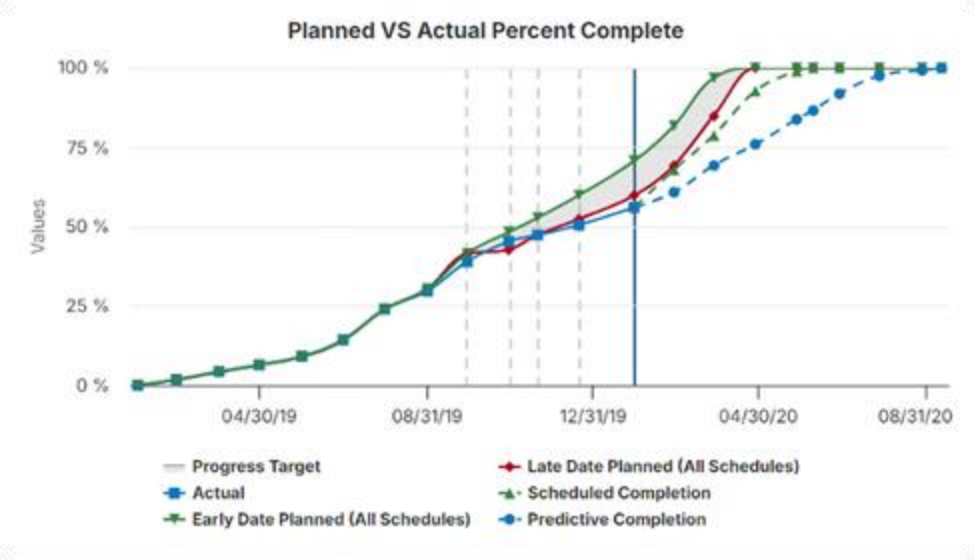
Predicted End Date

SmartPM's Predicted End Date uses a proprietary algorithm utilizing current progress to estimate the schedule's completion date by projecting the project's current SPI rate into the remaining activities' durations.

- This metric will begin to populate once the project is >50% complete. This way a bad actor early on does not skew the calculation too heavily.

This metric is a moving target and can be improved upon, as each new schedule update will refresh the SPI calculation.

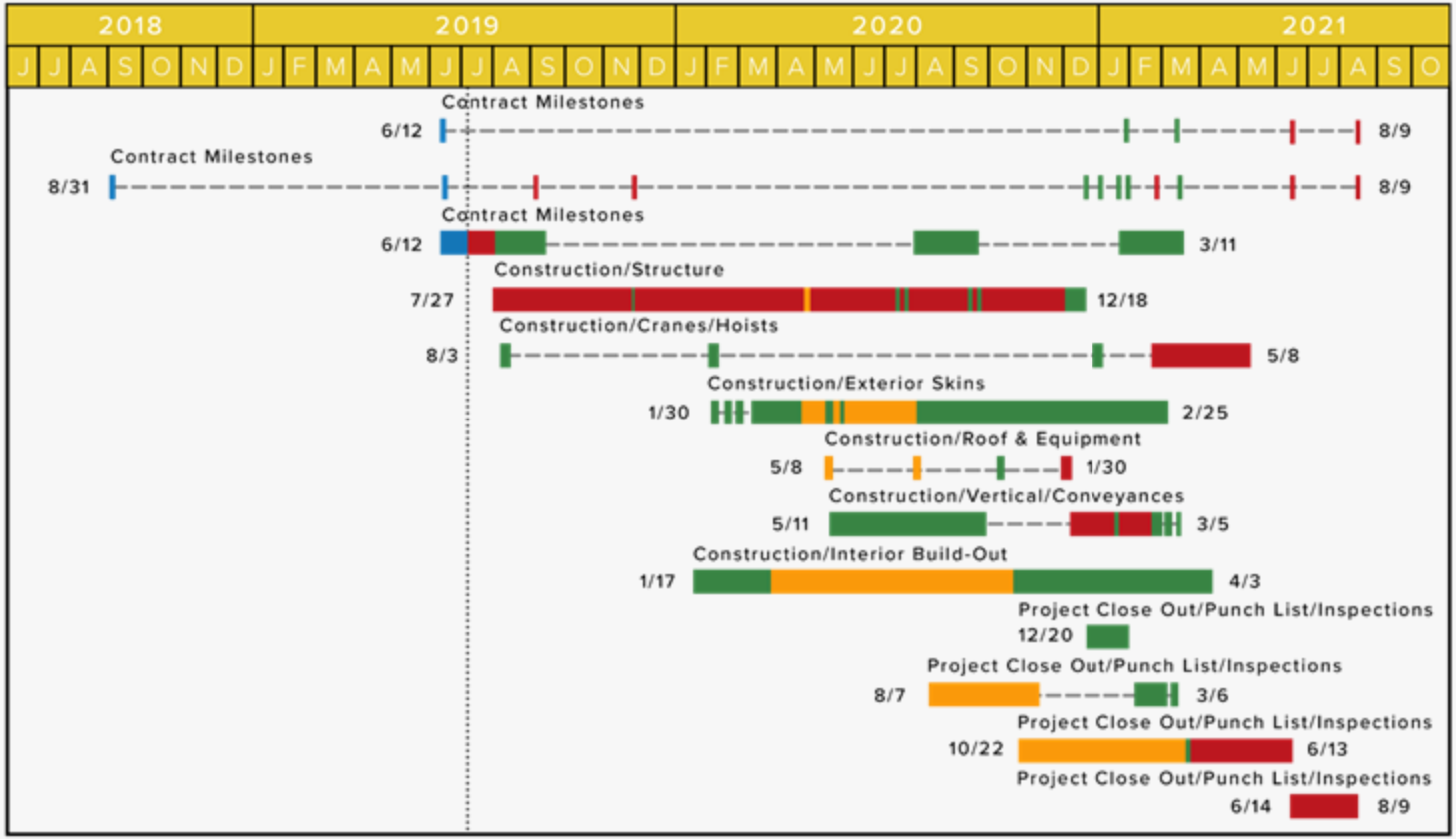
- A period with better-than-planned progress will bring the prediction in.
- A period with worse-than-planned progress will push the prediction out.



What you should know about Delay Analysis

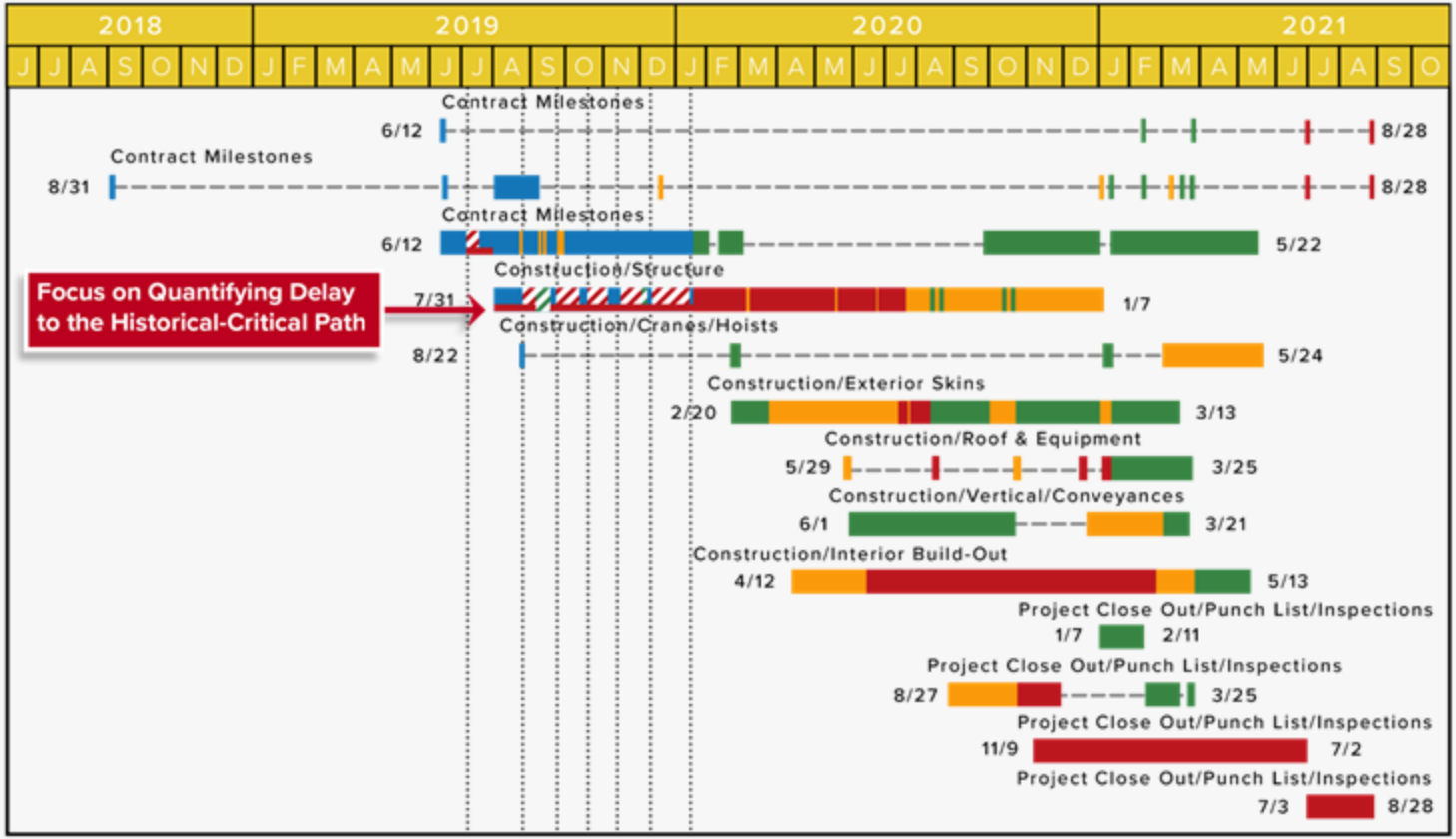
- Most Delay “Damages” occur when the end date of a project is pushed and consist of:
    - Extended General Conditions Cost (contractor)
    - Loss of Revenue (owner)
- Delays to the Critical Path are the only thing that can delay an end date. That being said, Liquidated damages can come into play, which require a more complex analysis of multiple critical paths driving multiple (different) points in time!
- Without Schedule Quality being present, Delay arguments are infinite because the critical path is arguable.
- The more schedules utilized in delay analysis, the better because it provides visibility on changes and other decisions made along the way.

Delay Analysis Example – Baseline



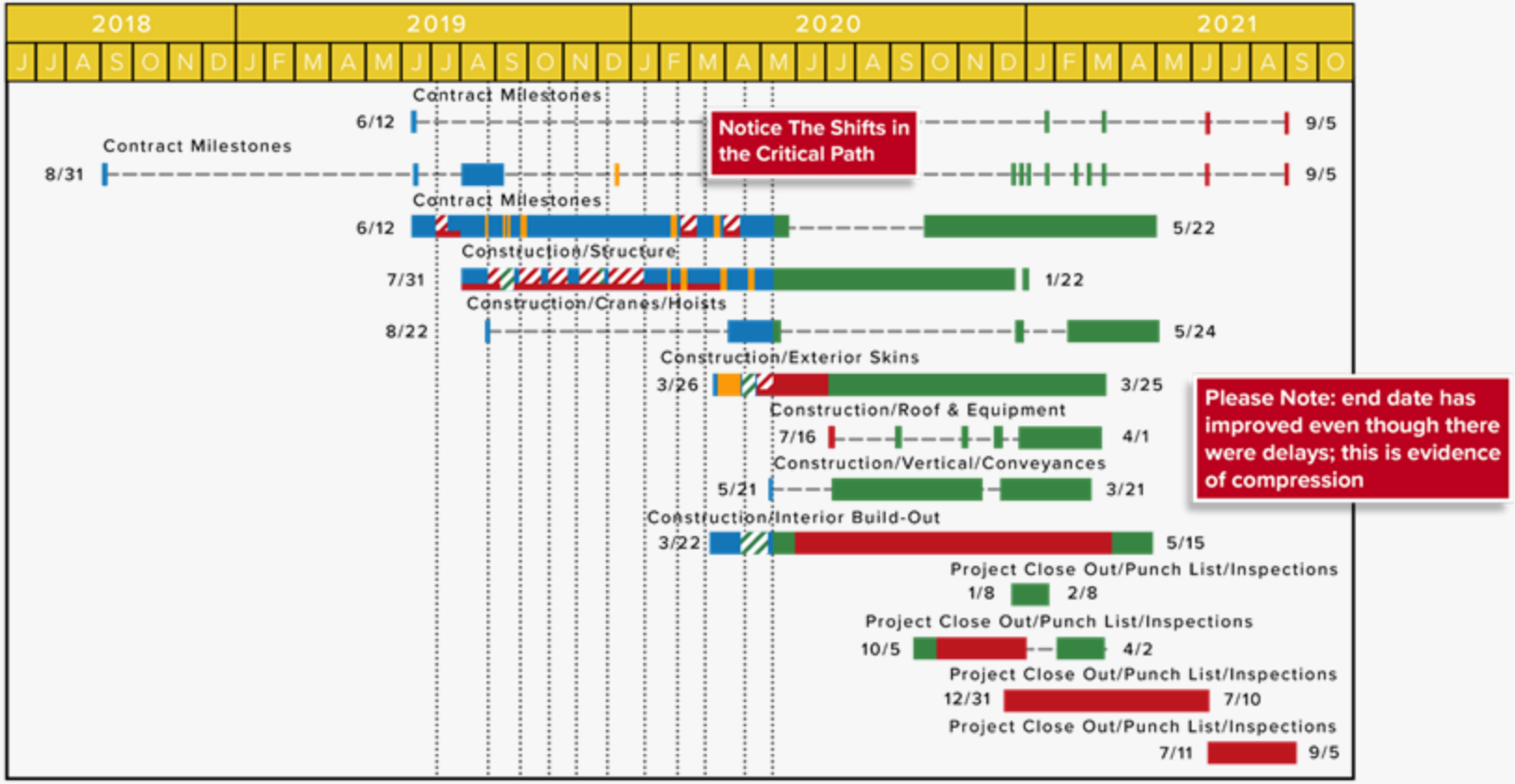
Original Period of Performance: 26 months

Delay Analysis Example – Update 6



Original Period of Performance: 26 months + 19 cd's delay

Delay Analysis Example – Update 10



Original Period of Performance: 26 months + 27 cd's delay

SmartPM's Approach to Delay Analysis

Taxonomy															
	1	RETROSPECTIVE													
	2	OBSERVATIONAL							MODELED						
	3	Static Logic			Dynamic Logic				Additive				Subtractive			
	4	3.1 Gross	3.2 Periodic		Contemporaneous Updates (3.3 As-Is or 3.4 Split)		3.5 Modified / Reconstructed Updates		3.6 Single Base[2]		3.7 Multi Base[1]		3.8 Single Simulation		3.9 Multi Simulation[1]	
	5		Fixed Periods	Variable Windows	All Periods	Grouped Periods	Fixed Periods	Variable Windows	Global Insertion	Stepped Insertion	Fixed Periods	Variable Windows or Grouped	Global Extraction	Stepped Extraction	Fixed Periods	Stepped Extraction
Common Names		As-Planned vs As-Built	Window Analysis		Contemporaneous Period Analysis, Time Impact Analysis, Window	Contemporaneous Period Analysis, Time Impact Analysis, Window Analysis	Contemporaneous Period Analysis, Time Impact Analysis	Window Analysis, Time Impact Analysis	Impacted As-Planned, What-If	Time Impact Analysis, Impacted As-Planned	Time Impact Analysis	Window Analysis, Impacted As-Planned	Collapsed As-Built	Time Impact Analysis, Collapsed As-Built	Time Impact Analysis, Collapsed As-Built	Time Impact Analysis, Window Analysis, Collapsed As-Built

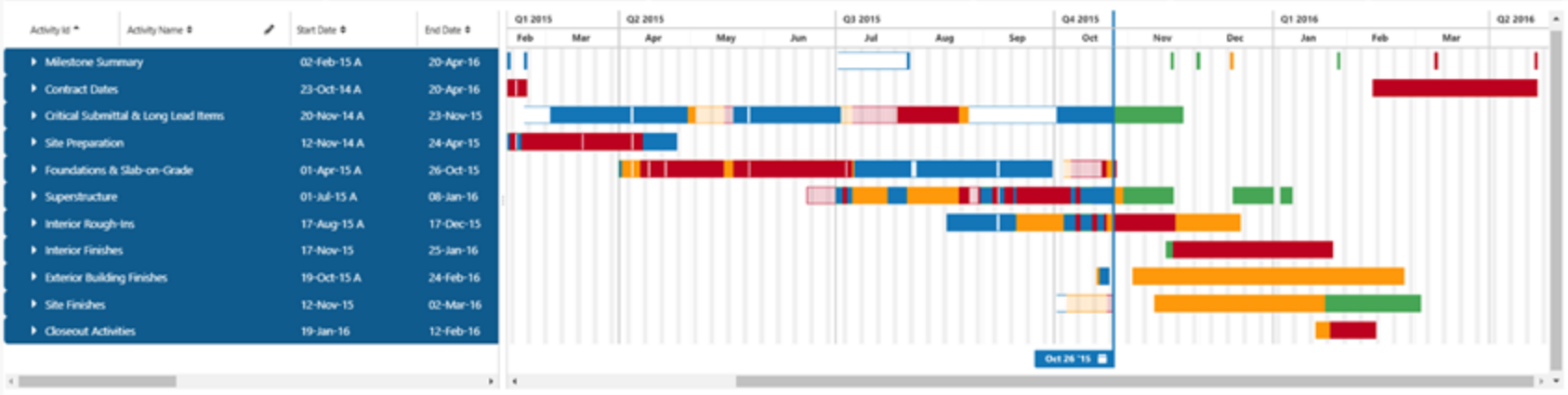
- SmartPM can perform any variation of Delay Analysis indicated in 29R-03.
- SmartPM allows users to Reconstruct and Model Schedules built into the program.
- SmartPM also Captures and Analyzes Weather Data (NOAA)

What is a Half Step Analysis?

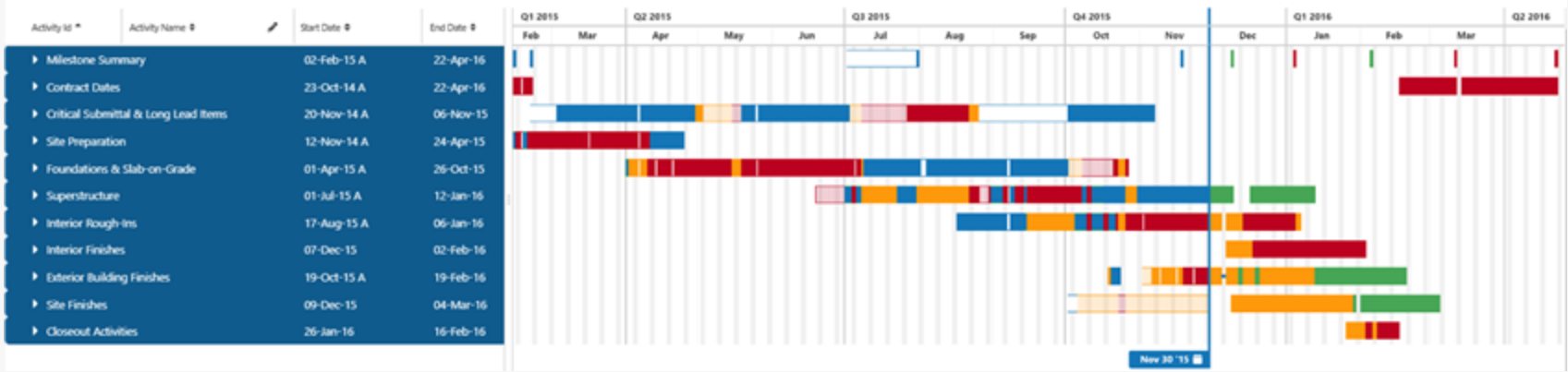
- The Half Step Analysis is an analysis that analyzes performance of a schedule from one update to the next – whereby removing any and all schedule changes.
- It is essentially a “progress only” analysis.
- It is useful because it allows the user to assess critical path delay in a sterile environment – or an unchanged environment.
- It is performed because most schedule updates possess changes from one update to the next that alter or change the critical and near critical paths.
- Changes typically result in acceleration or deceleration of the critical path, resulting in an “apples to oranges view of delay – making it difficult to quantify.
- The Half Step Analysis enables you to see both delay and acceleration/deceleration.

Half Step Example

Original Update 1

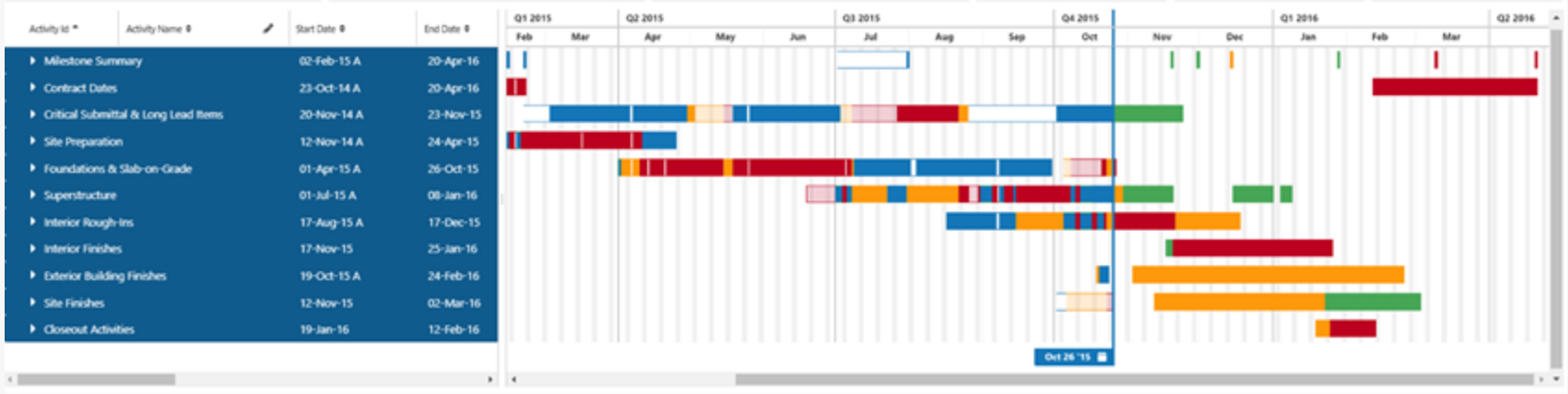


Original Update 2

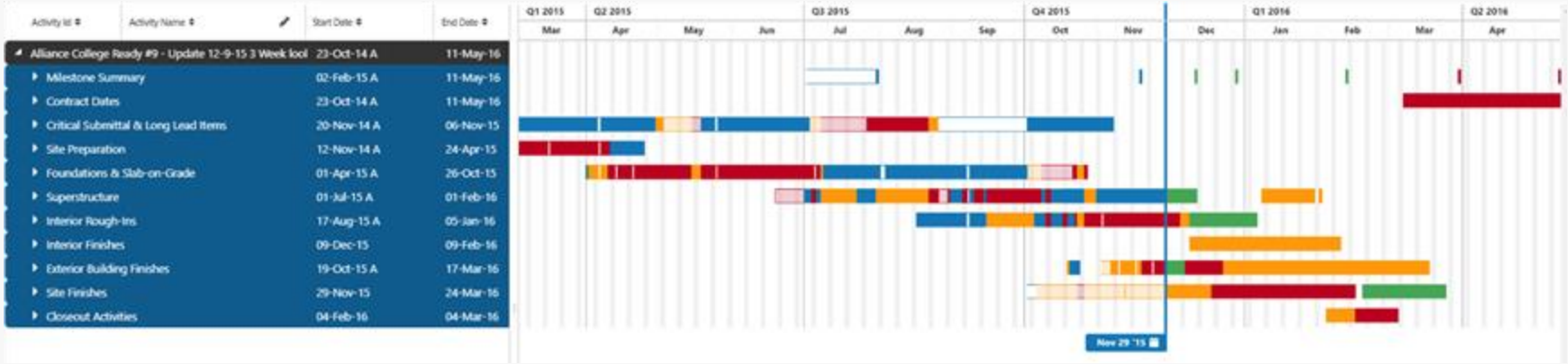


Half Step Example

Original Update 1

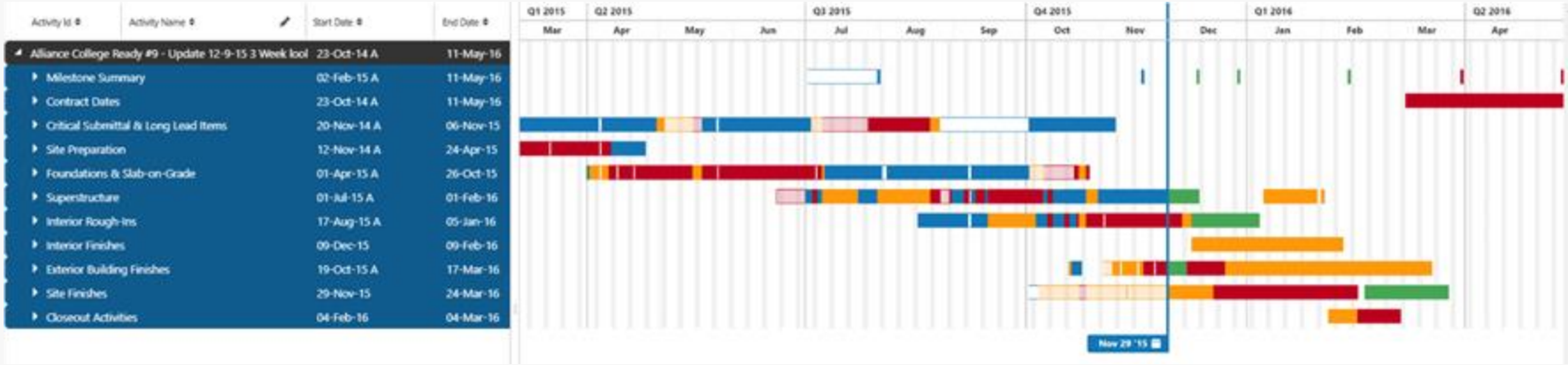


Update 2 Progress Only / Half Step

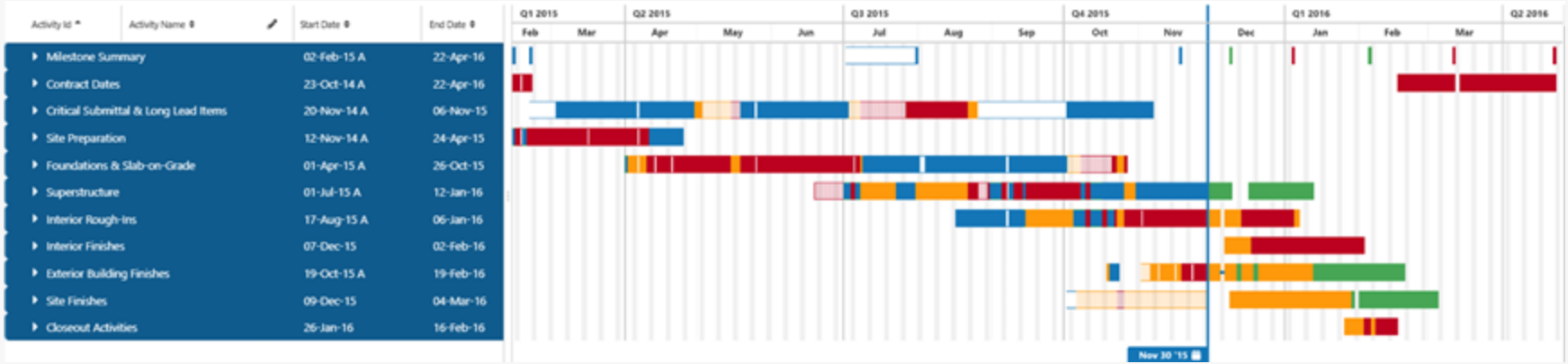


Half Step Example

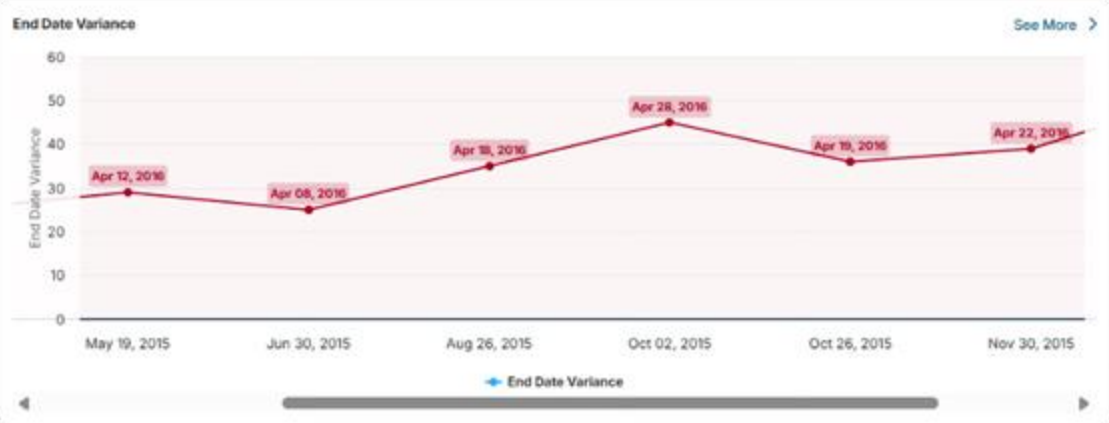
Update 2 Progress Only / Half Step

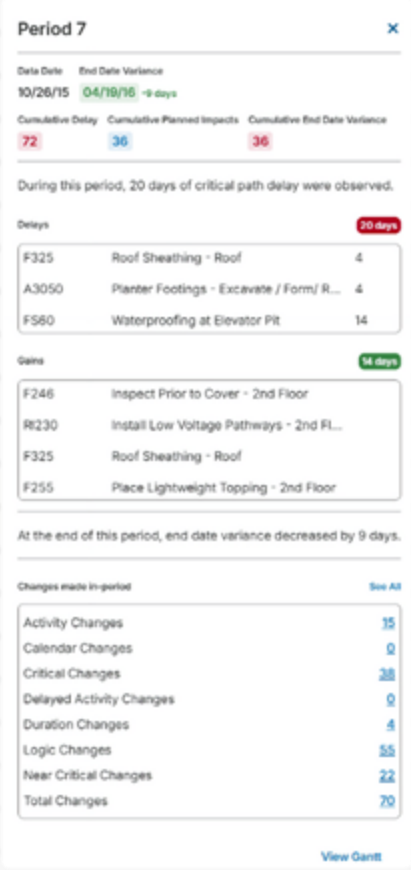


Original Update 2



Delay / Recovery over time





Delay / Recovery over time

Critical Changes on Oct 26, 2015

Flag	Schedule Date	ID	Change Item	Old Value	New Value
	2015				
⚑	October 26, 2015	S120 (Site Sewer- Exc. Install, Test & Backfill) - A3210 (Planter Footings - Excavate / Form/ Reif./Pour - South)	Deleted Logic (DELETED)	FS (0.0 days)	
⚐	October 26, 2015	A3130 (Planter Footings - Excavate / Form/ Reif./Pour - West) - A3140 (Planter Walls - Form/ Reif./Pour - West)	Updated Logic (lag)	0.0	-2.0
⚑	October 26, 2015	A3300 (Planter Walls - Form/ Reif./Pour - Courtyard) - A2900 (Site Concrete - Base & Flatwork - Courtyard & Corridors)	Deleted Logic (DELETED)	FS (0.0 days)	
⚐	October 26, 2015	A3220 (Planter Walls - Form/ Reif./Pour - South) - A3290 (Planter Footings - Excavate / Form/ Reif./Pour - Courtyard)	Deleted Logic (DELETED)	FS (0.0 days)	
⚐	October 26, 2015	RI125 (Rough Electrical - 1st Floor) - A2330 (Insulation Ceilings - 1st Floor)	Deleted Logic (DELETED)	FS (0.0 days)	
⚐	October 26, 2015	A3060 (Planter Walls - Form/ Reif./Pour - North) - A3130 (Planter Footings - Excavate / Form/ Reif./Pour - West)	Deleted Logic (DELETED)	FS (0.0 days)	
⚐	October 26, 2015	EX235 (Lath - All Elevations) - EX135 (Plaster - Courtyard (N,E,S Elevations incl Soffits))	Updated Logic (lag)	-10.0	-5.0
⚐	October 26, 2015	A3430 (Final Grade at Courtyard)	Added Activity (ADDED)		
⚐	October 26, 2015	EX245 (Flashing at windows)	Added Activity (ADDED)		
⚑	October 26, 2015	A3130 (Planter Footings - Excavate / Form/ Reif./Pour - West)	Updated Activity (constraint)	No Constraint	Start On 11/11/15
⚐	October 26, 2015	A2330 (Insulation Ceilings - 1st Floor)	Updated Activity (constraint)	No Constraint	Start On 10/29/15
⚑	October 26, 2015	A2330 (Insulation Ceilings - 1st Floor)	Updated Activity (plannedDuration)	5.0	3.0
⚑	October 26, 2015	A2760 (Install Ceiling Grid - 2nd Floor)	Updated Activity (plannedDuration)	8.0	3.0
⚑	October 26, 2015	EX235 (Lath - All Elevations)	Updated Activity (plannedDuration)	30.0	10.0

10 Analytics Every Project Should Track

Good scheduling isn't the finish line. Good analysis is. Below are the ten questions every schedule should help you answer, every month, on every project.

1. **Schedule Quality** – Does the schedule meet logic, float, and structure standards? Can it be trusted?

2. **Update Integrity** – Do our updates reflect real progress—or are they being adjusted to "look right"?

3. **Earned Value** – Are we earning as much progress as planned? Where are we slipping?

4. **Changes** – What changed this month? Who made the change—and why?

5. **Compression** – How much work is being pushed into less time? Are we seeing red flags?

6. **Hit Rates** – How often do we hit our weekly targets? Which trades are consistent—and which aren't?

7. **Delay** – Are we tracking slippage in real time—or waiting until it hits the end date?

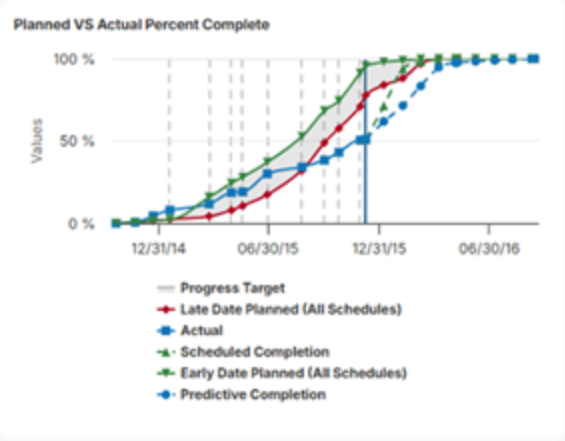
8. **Feasibility** – Can this schedule still be built as planned? Or are we past the point of recovery?

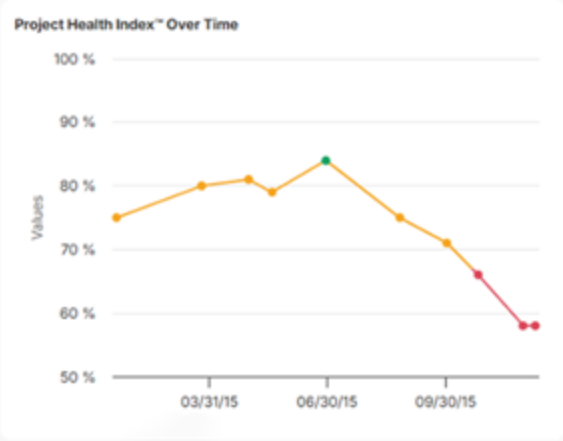
9. **Forecast Accuracy** – How well have past projections held up? Are we improving or guessing?

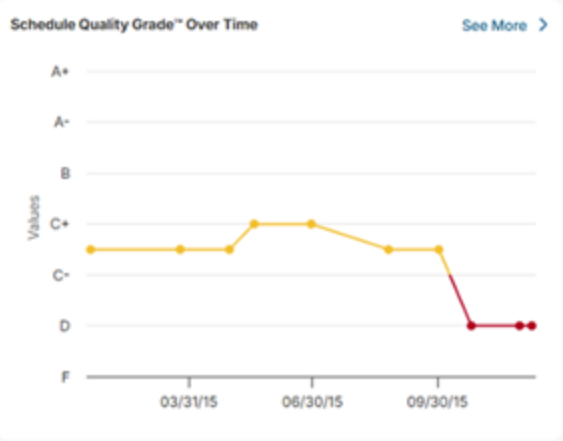
10. **Critical Path Stability** – Is the critical path shifting for the right reasons—or being manipulated to buy time?

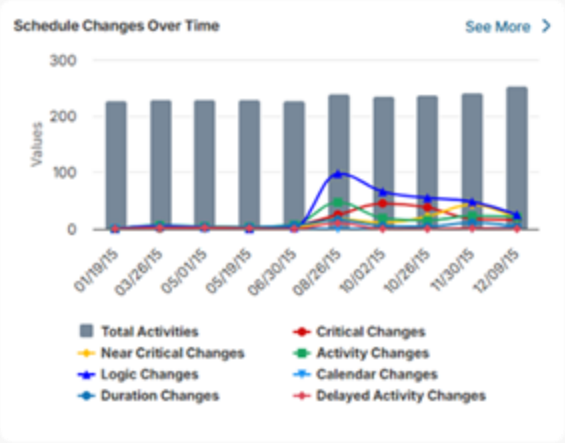
Schedules don't build projects, people do. But people can only make the right decisions when the schedule data is accurate, shared, and actively used.

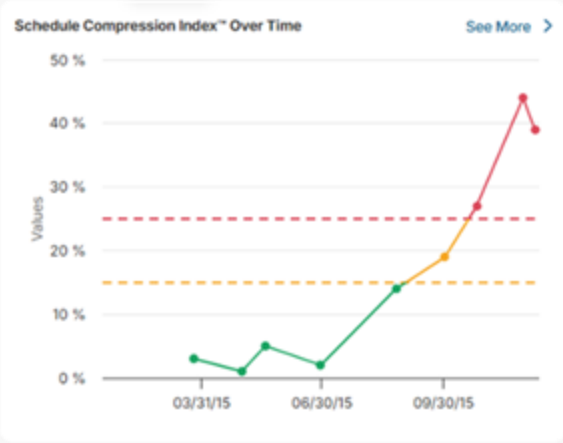
The Data Tells an Important Story

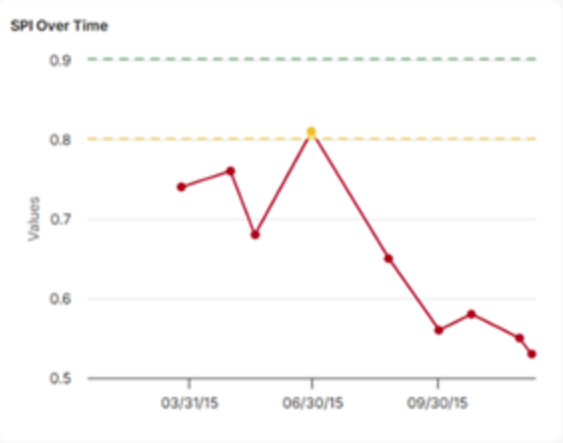




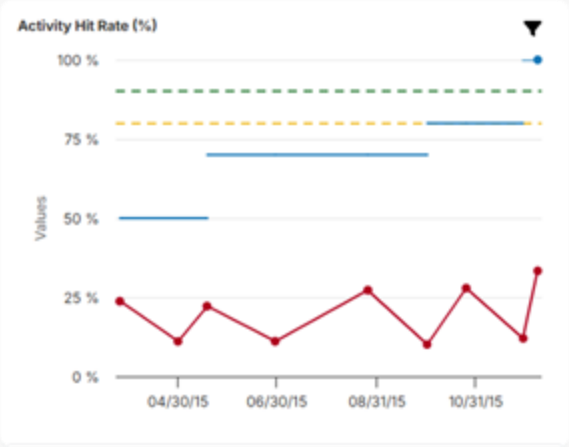


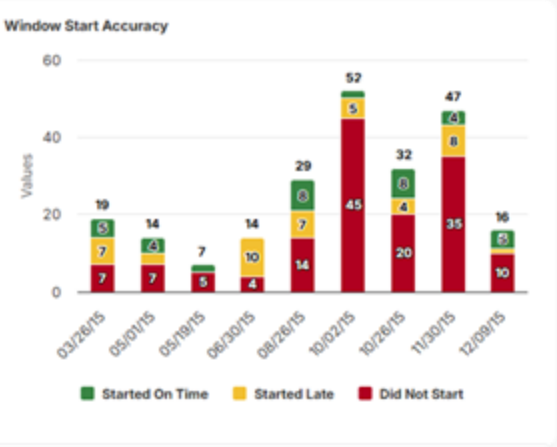


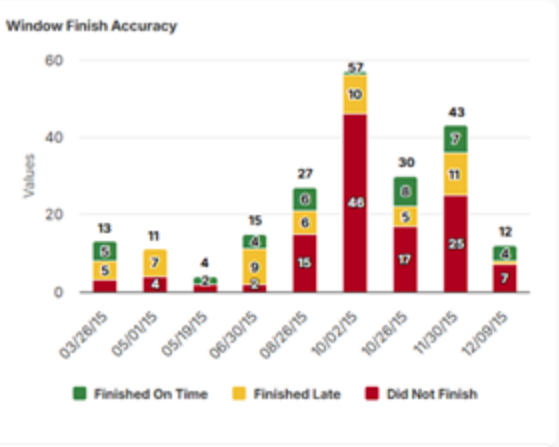


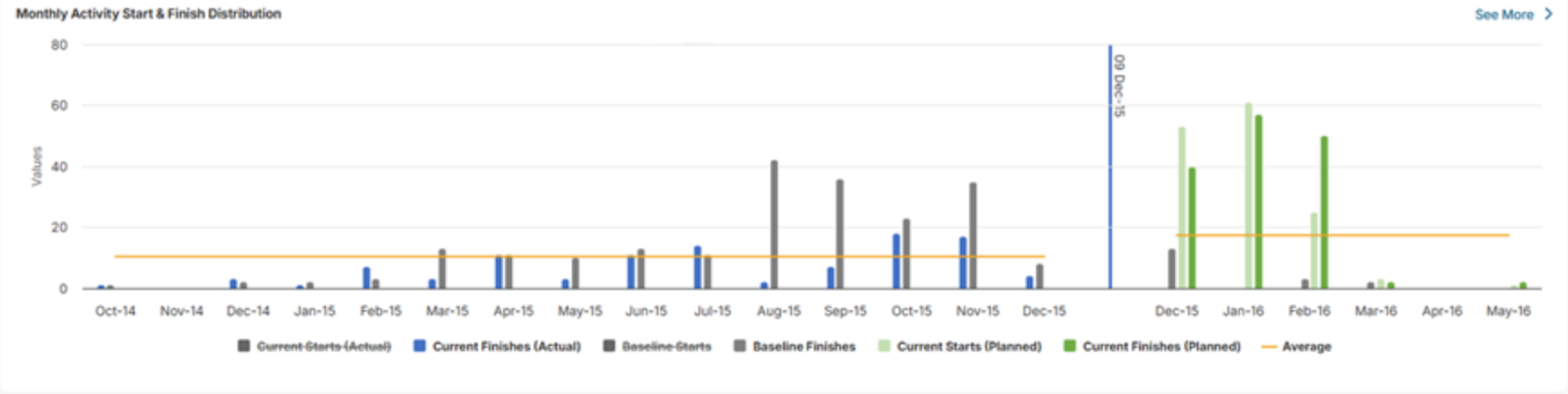


The Data Tells an Important Story









We surveyed consultants to answer that exact question. Here's how much time, on average, it takes per month per project to perform proper schedule oversight:

This is what it takes to study schedule quality, monitor delay, and run predictive analysis every month at a level that actually supports risk management - work most teams don't have the staff to perform.

Manual Hours Required for Proper Schedule Oversight

Project Size	Quality Review	Delay Analysis	Predictive Assessment	Total Hours
<$10M	4 hrs	8 hrs	4 hrs	16 hrs
$25M	8 hrs	16 hrs	8 hrs	32 hrs
$50M	12 hrs	24 hrs	12 hrs	48 hrs
$100M	16 hrs	32 hrs	16 hrs	64 hrs
$250M	24 hrs	40 hrs	24 hrs	88 hrs
$500M	32 hrs	56 hrs	32 hrs	120 hrs
$1B	40 hrs	80 hrs	40 hrs	160 hrs

What SmartPM Changes

Automation that scales project-controls expertise across every job.

SmartPM automates the heavy analytics consultants are hired to perform: delay analysis, update audits, compression tracking, predictive forecasting.

It doesn't replace the scheduler; it just makes the work possible at scale. SmartPM turns the two-weeks of manual work required into a single day while preserving depth and accuracy.

The result: actionable data on every project, without a full time analyst doing it by hand.

90% SmartPM Users Report a 90% Reduction in Analysis Time.

3X SmartPM users are 3x more likely to update their schedules weekly or biweekly compared to teams operating on a monthly cadence.

Two weeks of Manual Analysis ⟶ One Day with SmartPM

Project Size	Manual Oversight	With SmartPM
$100 M	64 hrs →	6 hrs
$250 M	88 hrs →	8 hrs
$500 M	120 hrs →	12 hrs
$1 B	160 hrs →	16hrs

Only 4% of firms have project controls staff - enough coverage for ~10 % of projects. SmartPM's 90% time savings scales that coverage to 100% of projects.

So What's the Answer?

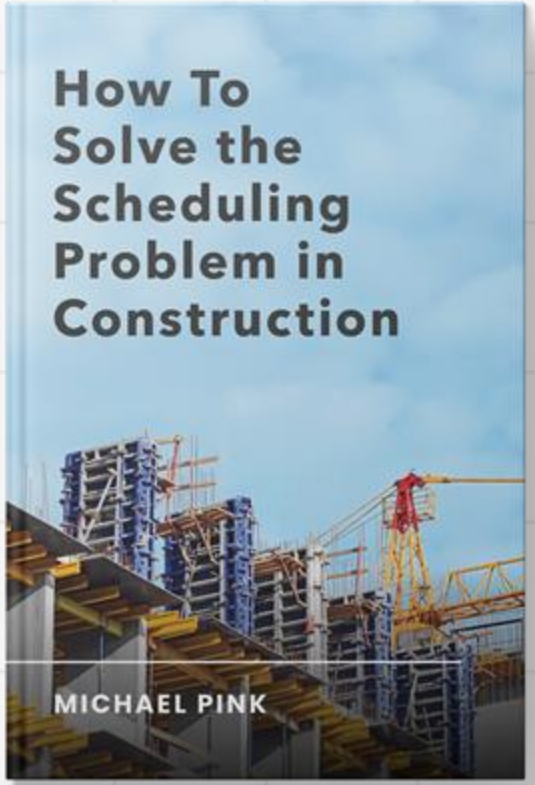
It's not to throw more hours at the problem. It's to create structure and controls.

That Means:

- Embedding schedule analytics into your monthly workflow
- Building standards around earned value, delay, feasibility, and compression
- Sharing what you find transparently with the field, with leadership, and with partners
- Using the data not just to explain performance, but to improve it

Because without visibility, there's no accountability. And without communication, the schedule can't drive action.

We've spent years helping teams solve this problem, not just by giving them another scheduling tool, but by helping them understand what matters inside the schedule and how to use that insight to manage projects better.



See what your schedule isn’t telling you.

Let SmartPM bring clarity, accountability, and confidence to every project.

SmartPM was instrumental in removing emotion in order to let the facts and data dictate negotiation.

Josh Thigpen
Senior Development Manager & Partner

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