

Last Planner Principles

- Plan in greater detail as you get closer to doing the work.
- Produce plans collaboratively with those who will do the work.
- Reveal and remove constraints on planned tasks as a team.
- Make and secure reliable promises.
- Learn from breakdowns.

Last Planner Functions

- Collaborative planning
- Making Ready
 - Constraints identification and removal
 - Task breakdown
 - Operations design
- Releasing
- Committing
- Learning

Last Planner Methods

- Reverse phase scheduling (aka 'pull planning', 'pull scheduling', 'phase scheduling'; stickies-on-a-wall)
- Constraints analysis; constraint logs; risk registers
- Task hierarchy: phase/process/operation/steps
- First run studies
- Daily huddles
- Reliable promising
- Metrics
 - Percent plan complete
 - Tasks made ready
 - Tasks anticipated
- 5 Whys analysis

Concept vs Detailed Design

- Design ranges from conceptual to detailed, culminating in the production of instructions for use of the design—for purchasing, bidding, permitting, fabrication, installation, testing, commissioning....
- As design progresses into detailing, the model of information processing becomes a better fit.
- But information processing is not an appropriate model for conceptual design. That's where we should focus the inquiry about design control.

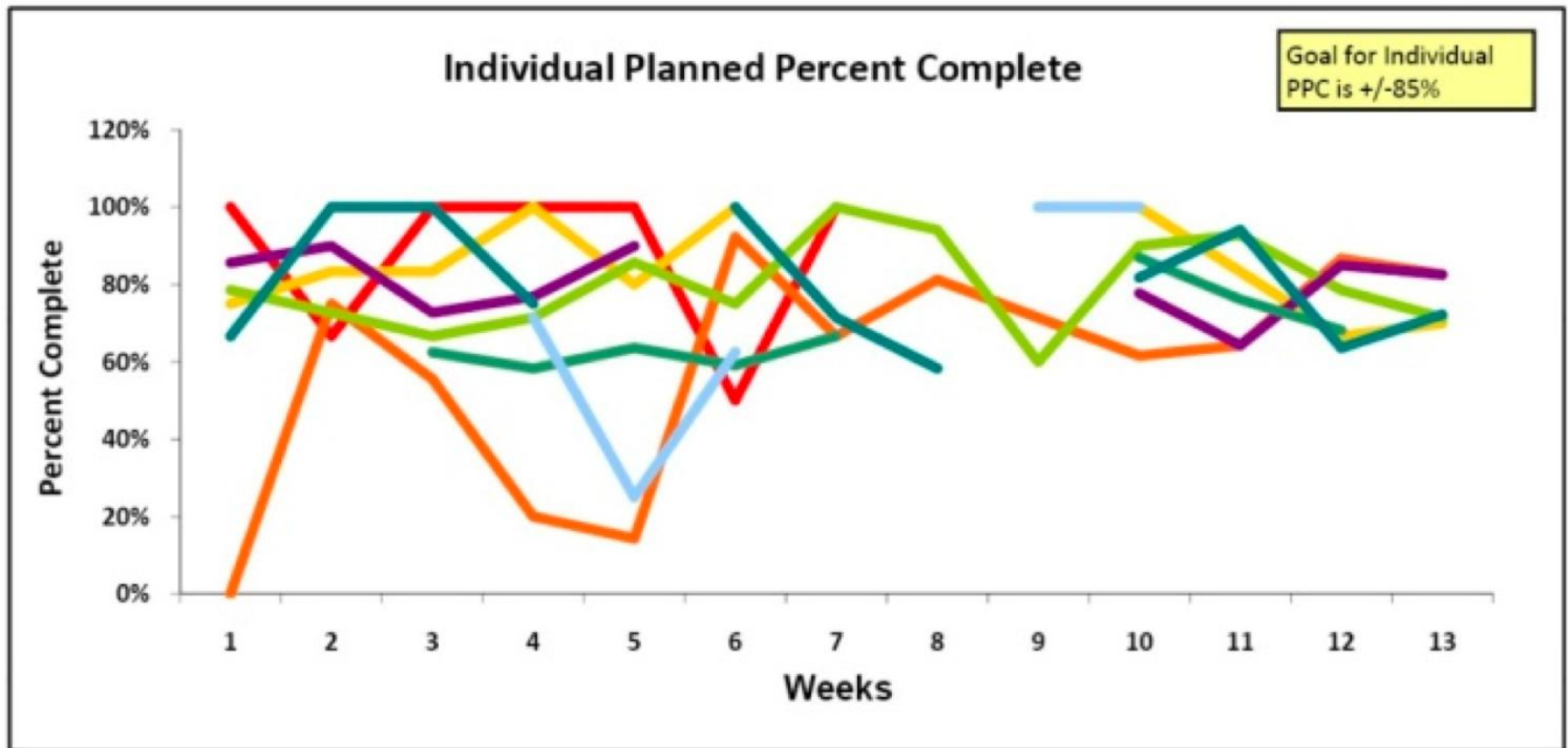
What Differences Make a Difference for Control?

- uncertainty of ends or means
- speed of execution
- complexity of the work

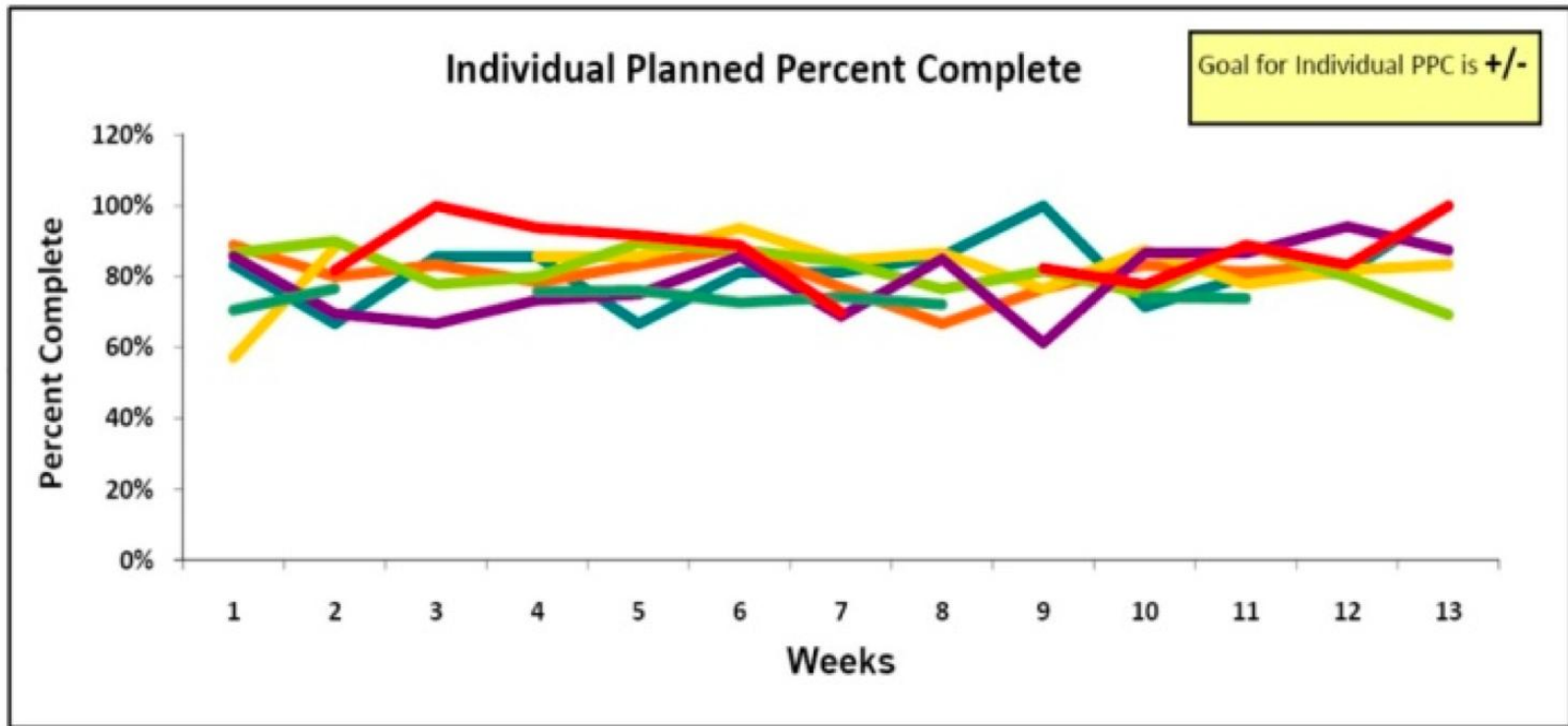
Boulder Associates Case

- Led by Romano Nickerson in the Sacramento office
- Began in March 2008
- Weekly team planning meetings on Mondays
- Team leader conducted daily “huddles” at each team member’s work station to monitor work and respond to questions and requests

Team Member PPC-1st 13 Weeks

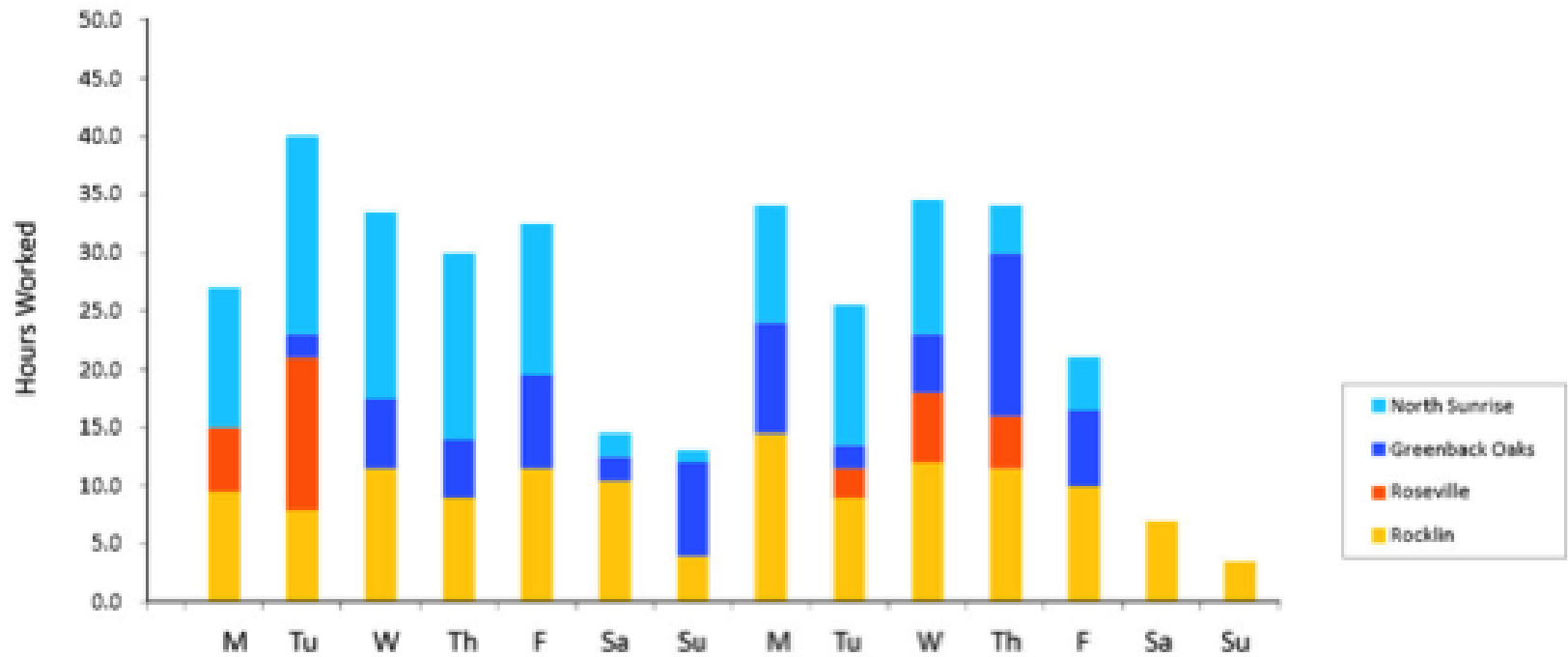


Team Member PPC-2nd 13 Week Period



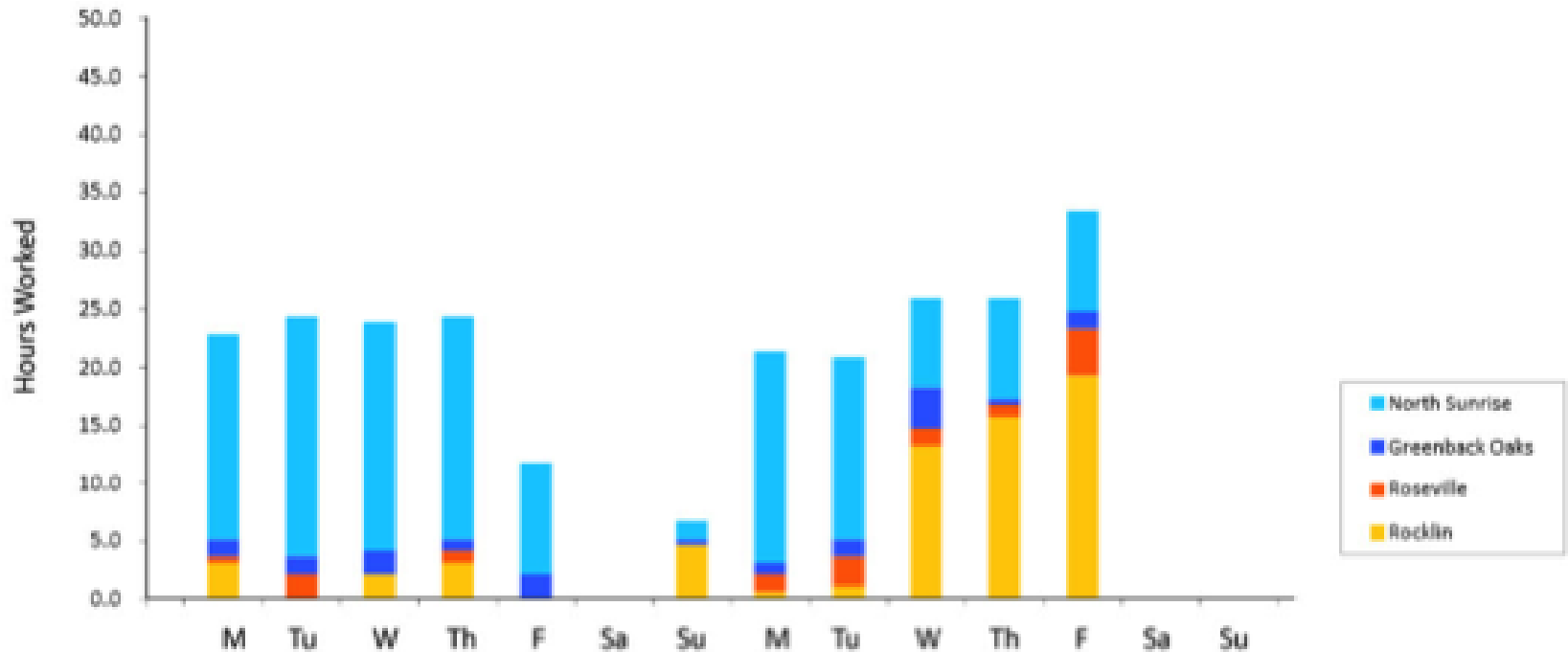
Two Weeks in March 2008

	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Boulder Associates														
North Sunrise														
Greenback														
Roseville														
Rocklin														



Two Weeks in May 2008

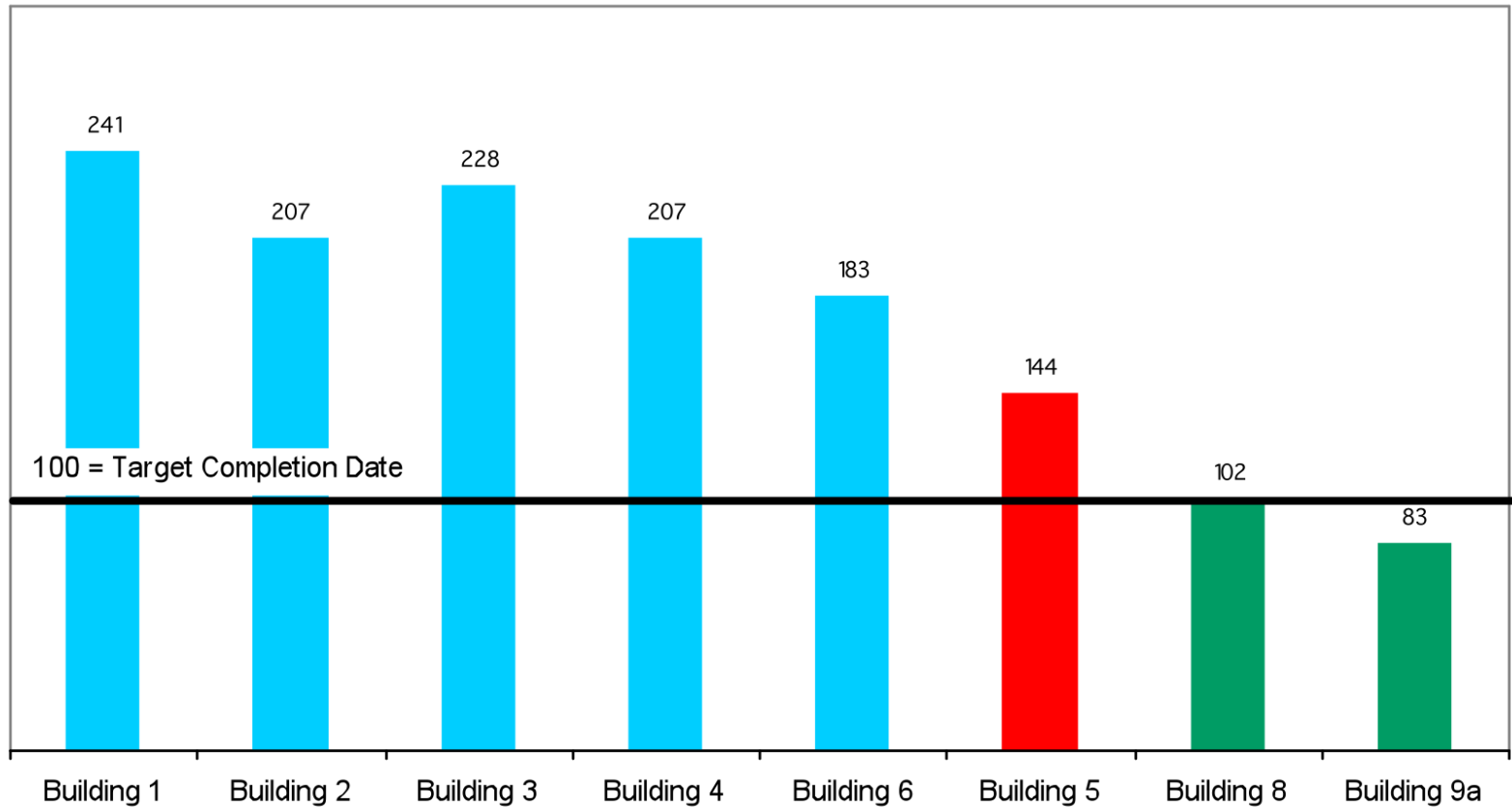
	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Boulder Associates														
North Sunrise									North Sunrise					
Greenback			Greenback						Re-Submittal					
Roseville			Submittal											
Rocklin									Rocklin Submittal					



Adept Management Ltd Case

- New town development in U.S.
- Led by Jamie Hammond, Adept Mgmt. Ltd.

Schedule Performance



Design Scheduling without Control

- The Building 5 project was the first application of the ADePT approach. The design team spent approximately 3 days per design discipline working collaboratively to define their design tasks, information requirements, and identifying their major risks. The results were then analyzed using a Dependency Structure Matrix (DSM) analysis tool, enabling them to see their complex, interdependent relationships.
- The results of the DSM workshops enabled the team to make critical coordination decisions and agree working assumptions. Design management strategies were also derived, whether graphically (through process mapping), or in words (design working method statements/philosophies). These strategies were crucial since they unraveled problems associated with iteration in design prior to technical delivery.
- The agreed and optimized design process was then imported into a scheduling tool, which enabled the team to finalize and publish a timeline for the overall delivery of the design. This represented a single integrated set of commitments, and was regarded as their Master Schedule.

Building 5 Results

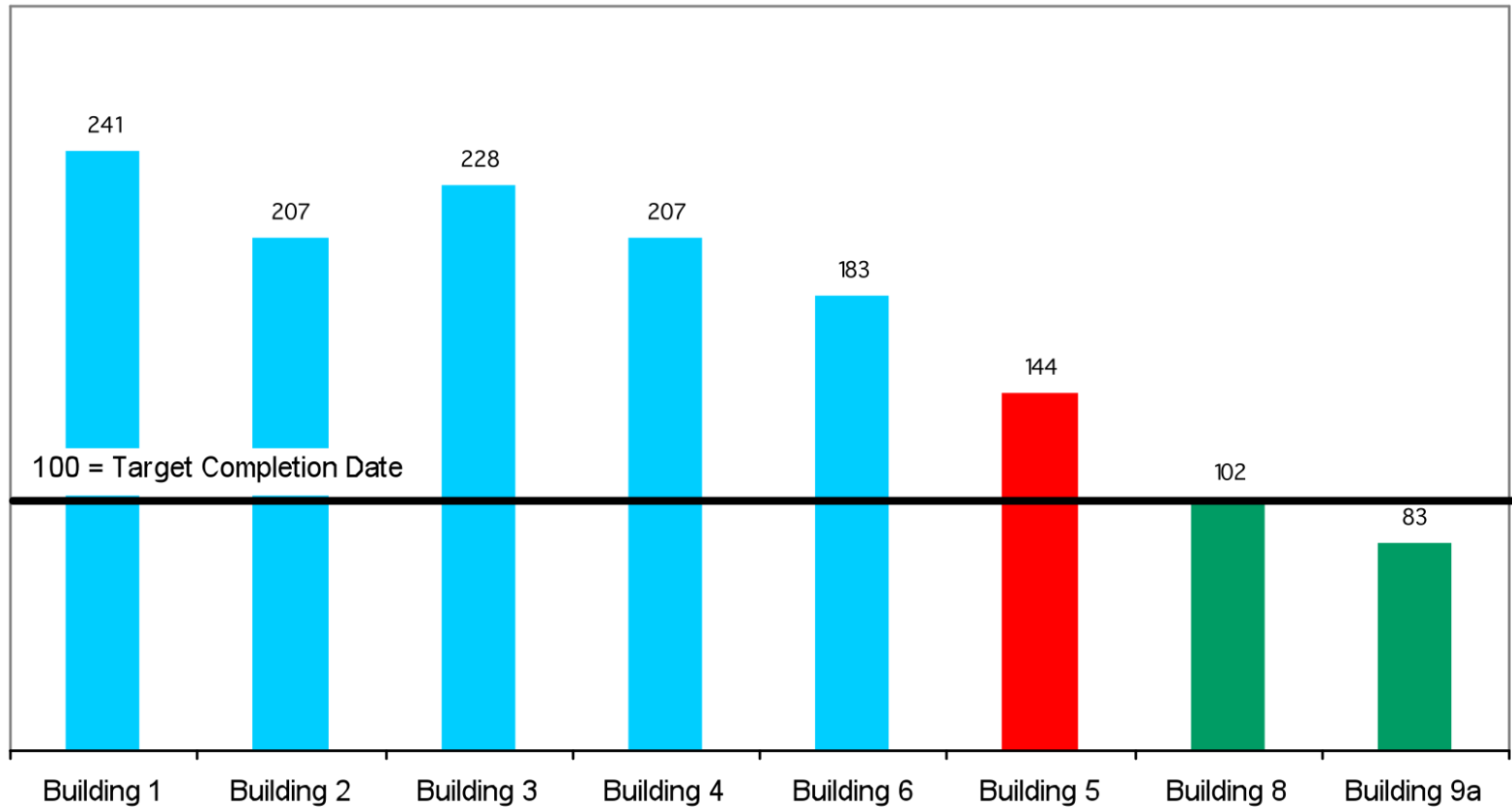
- Old target duration (comparable building): 16 months
- New target duration (master schedule): 9 months
- Actual duration at completion: 13 months
- Time Savings: 3 months, 19%--but overshot target

Building 5 Production Control

The team agreed a six week lookahead period and a two week focus period (which constituted the workplan) and '*design team progress meetings*' were carefully structured to facilitate the Last Planner process as follows:

- Report progress for the previous focus period: each design discipline leader reported PPC, levels of completeness, and the status of Work in Progress;
- Analysis of root cause for failure for those commitments that were not met by the team;
- Report newly identified constraints for activities in the lookahead period;
- A review of existing commitments in the lookahead - confirming that the design process that was agreed prior to commencing design was still valid;
- Impact analysis of change and rescheduling design activity (utilizing the DSM tool);
- Action planning to resolve constraints for the next focus period;
- Confirmation of commitments for the next focus period and lookahead period.

Schedule Performance



More Outcomes

- **Design process transparency:** improved process understanding was achieved and maintained from the very first workshop to develop the master schedule, to the last design team meeting to review Last Planner progress – this was achieved due to the collaborative nature of the scheduling and workflow control methodologies;
- **Designer behavioral changes:** commitment to complete activities yielded a more determined and focused approach. The design team were open and honest when reporting failure (and defining root causes), and were more sympathetic when working through action planning;
- **Focus on flow:** the design team maintained a focus on the flow of information, not the release of documentation (product);
- **Hungry to improve:** initially, failure was rejected (hard to accept) however ultimately failure prompted the desire to improve, so not to be exposed as the ‘weak link in the chain’.