27TH ANNUAL

LCI CONGRESS
OCT. 20-24, 2025

Building Champions: Constructing the Game Plan for Lean Success

Beyond Post-its: Mastering Pull Planning

October 22, 2025

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BEYOND POST-ITS

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A practical guide to creating reliable pull plans and optimal flow through **Specificity** and **Adaptation**.

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DPR CONSTRUCTION

Six Tenets of Lean Construction

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1. Respect for People
2. Optimize the Whole
3. Generate Value
4. Eliminate Waste
5. Focus on Flow
6. Continuous Improvement

Continuous Improvement

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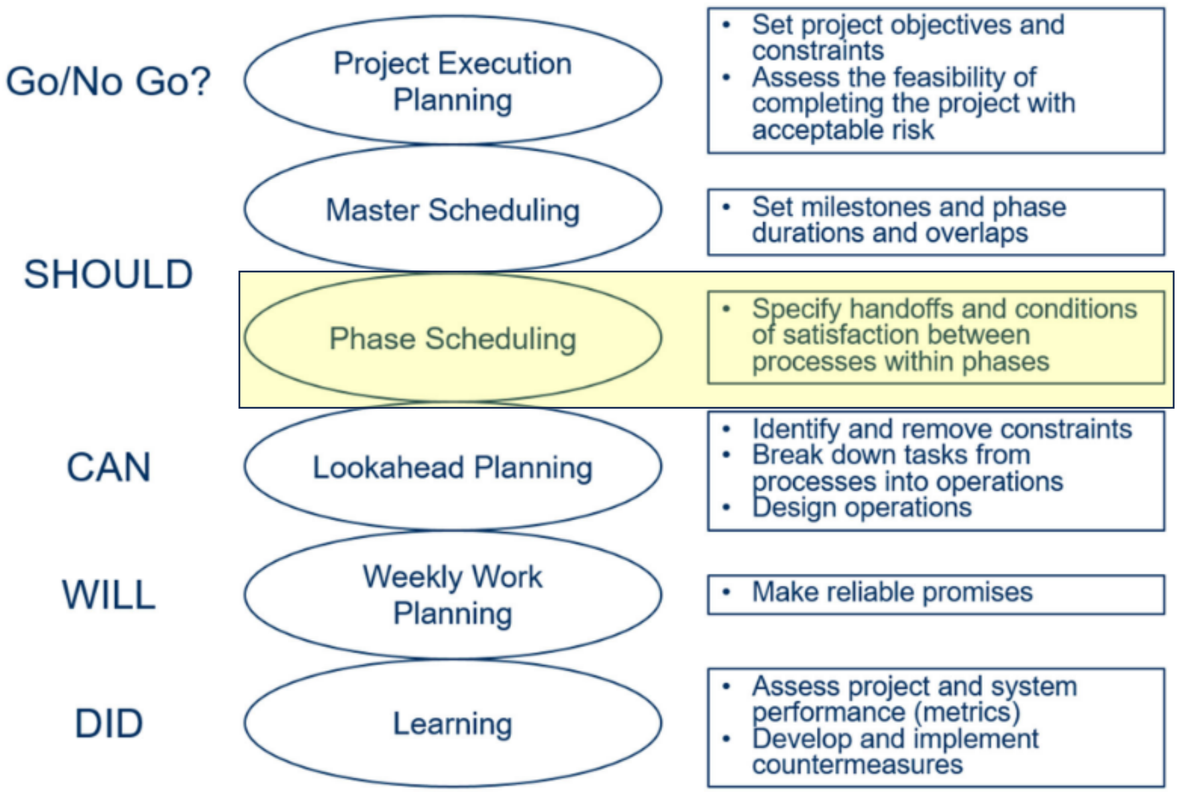
Lean thinking demands a mindset of continuous improvement.

This requires an environment where we can discuss what's not working well and find fixes.

Problem Statement

Project schedules are often unreliable as rigid planning methods which fail to address the dynamic nature of construction.

Superficial pull planning, lacking specificity and detailed operational design, further contributes to this unreliability.



Why Rigid Plans Fall Apart

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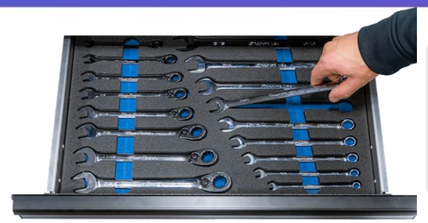
Why do so many of our plans fail? Because we often fail to **honestly** answer these two questions:

1. **Is our plan built on a system of detailed inputs, or a shaky one based on a series of assumptions?**

2. **If we find an error in our decision or logic, can we rapidly pivot and reroute for optimal flow, or are we forced to double down on existing resources (e.g., overtime, trade stacking, delay notices)?**

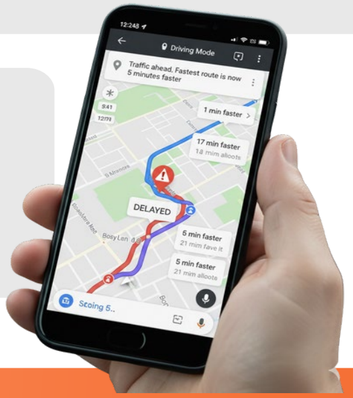


Lack of Specificity

We often fail to prepare the right people, information, and environment.

Lack of Adaptation

Driven by an unspoken fear of our system's fragility, we treat our plans as a roadmap, unable to creatively respond to the reality of constraints.



Academic INSIGHT

- **Technical Systems Fail Without Adaptation.**
- **Rigid 'Push' Planning Creates New Problems.**
- **All Plans Are Inherently Inaccurate.**
- **Warning Signs Are Often Ignored.**

Seppänen, O., Ballard, G., & Pesonen, S. (2010). The Combination of Last Planner System and Location-Based Management System. Lean Construction Journal, 43–54.

A Framework For Practice: Pillar 1 - Specificity

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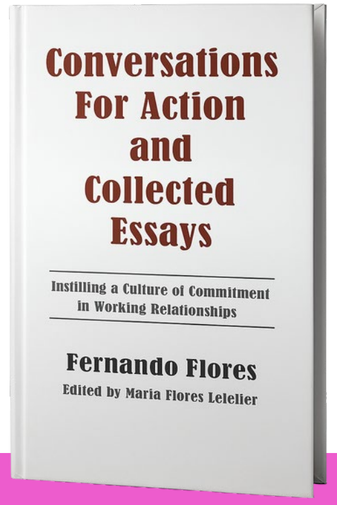
To counter the "double problem" of rigid plans, use a pull planning practice built on two foundational pillars.



"Management is a network of conversations and commitments." Fernando Flores

Use <u>deliberate preparation</u> to counter the primary reasons plans fail.

Standardize the Roles:

- **The Facilitator:** Guides the conversation and maintains a collaborative environment
- **The Builder:** Makes final decisions on the plan itself to resolve technical issues and align with the project goals.
- **The Project Leader:** Manages session logistics and external factors like business agreements and owner/designer constraints.
- **Commitment Maker:** Act as ambassadors for their companies, making reliable promises based on their deep technical knowledge.

Conditions of Satisfaction (CoS):

1. **Request:** The Customer makes a specific request to a Performer.
2. **Negotiation & Promise:** The Performer can accept, decline, or counter-offer.
3. **Performance:** The Performer does the work they promised.
4. **Declaration of Satisfaction:** The Customer reviews the work and formally declares that it is complete and satisfactory, closing the loop.

A Clearly Written Invitation:

1. **The Specific Goal:** A clear statement of the milestone or phase of work.
2. **A Written Set of Expectations for Commitment Makers.**
3. **The Desired Outcome:** A definition of the session's tangible output. *"A coordinated production plan for the 3rd floor Overhead MEP rough-in..."*

Specificity: Work Density

Define the Building Blocks

Overlay a grid onto your floor plan.

Collect Production Data (Inputs)

1. **Quantity:** The total amount of work units required for a specific task within that Cell.
   (Hang Drywall → 1,500 square feet of drywall in Cell A1.)

2. **Production Rate:** The time it takes the crew to complete one unit of work.
   (Drywall Crew → 0.005 hours per square foot.)

Calculate Work Density (The Formula)

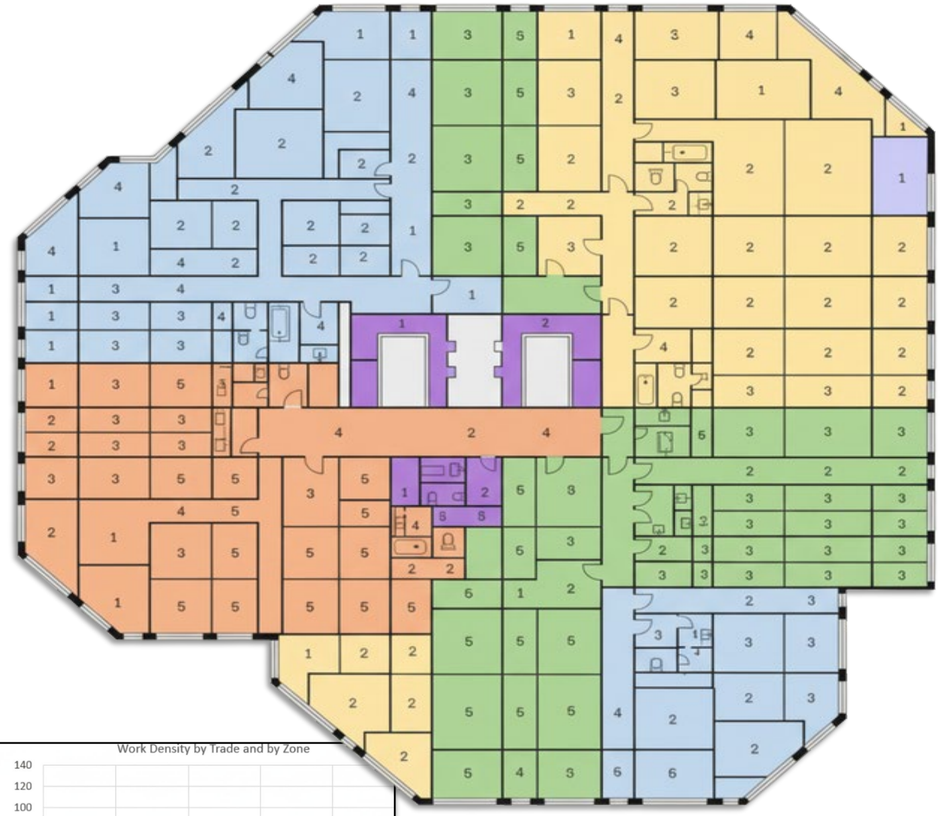
Work Density [Time] = Quantity [units/area]×Production Rate [time/unit]

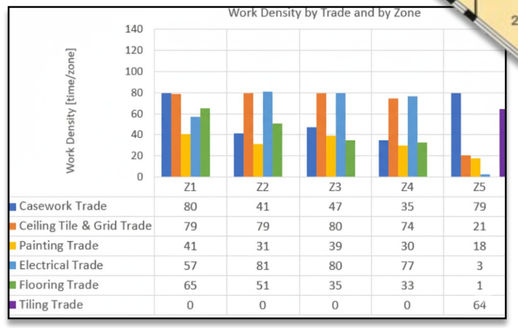
Drywall Workload in Cell A1: (1,500 sqft × 0.005 hours/sf)= 7.5 hours.

Show the number “7.5” in the Cell.

Model and “Level” the Workload

1. Use a separate table or graph which sums the Work Density of all cells assigned to a Zone.
2. Adjust the boundaries the zone or crew sizes until the work density is balanced across zones

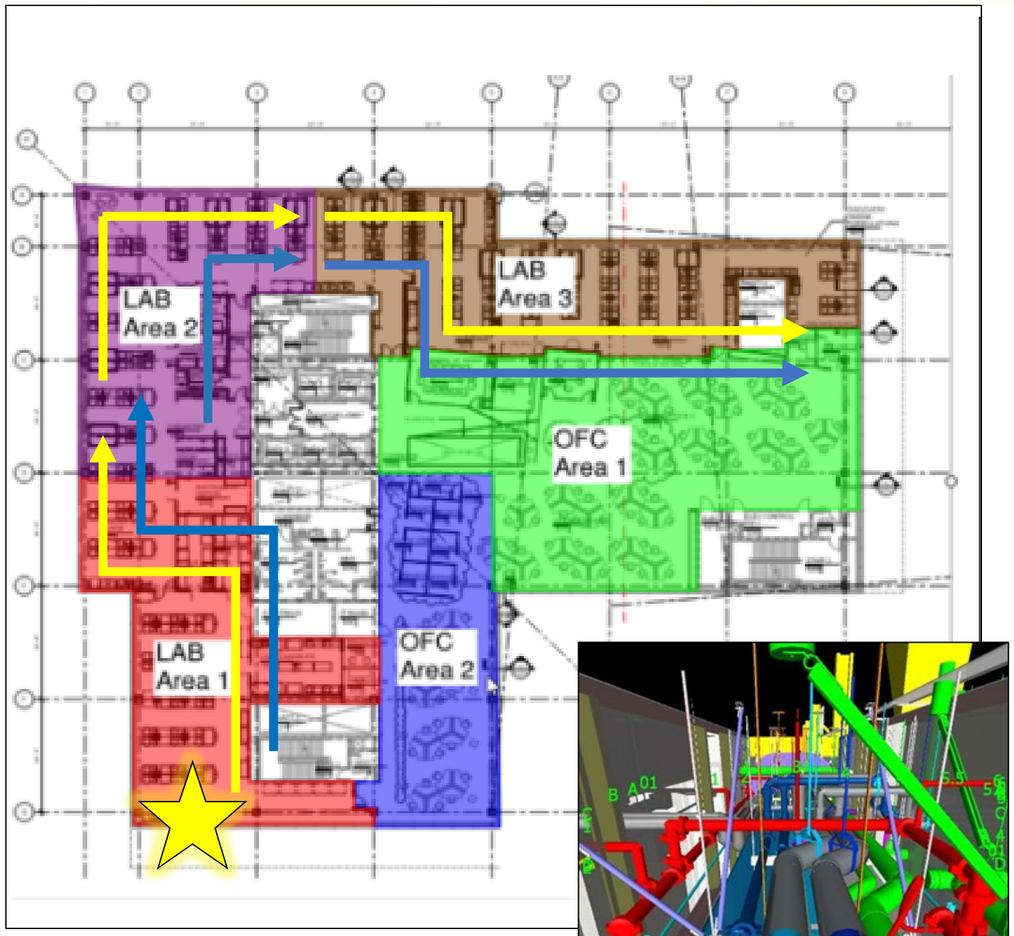


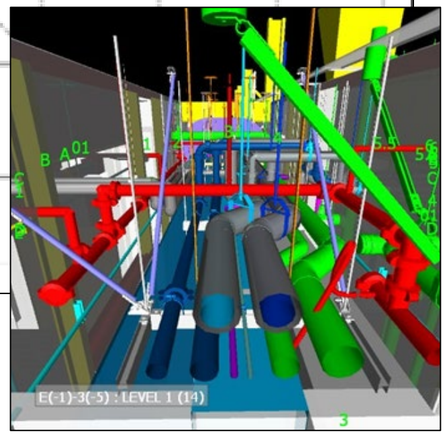


	Z1	Z2	Z3	Z4	Z5
Casework Trade	80	41	47	35	79
Ceiling Tile & Grid Trade	79	79	80	74	21
Painting Trade	41	31	39	30	18
Electrical Trade	57	81	80	77	3
Flooring Trade	65	51	35	33	1
Tiling Trade	0	0	0	0	64

Singh, V. V., Tommelein, I. D., & Bardaweel, L. (2020). Visual tool for workload leveling using the work density method for Takt planning. (Figure 3, Zoning Dashboard for Work Density Visualization: Before and After).

Specificity: Work Direction and Starting Position





Establish Directional Flow and Starting Position

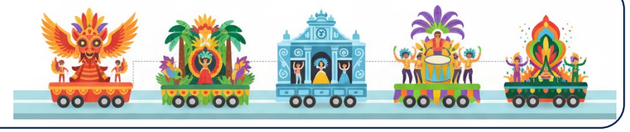
Ask the question: **"Which functional area or system needs to be available first?**

THE ANSWER TO THIS QUESTION "SETS" THE STARTING POSITION.

Example:
"Priority Walls, Window Soffits then Fire Sprinkler, Mechanical piping, Overhead Electrical and Supply HVAC in "Lab Area 1" must be complete first to release the office areas. Also, Area 1 must be completed before Area 2 and 3. "

"Therefore, **Lab Area 1 is the starting position**, **work direction is West to East, Office areas follow the Labs**."

The "Parade of Trades"



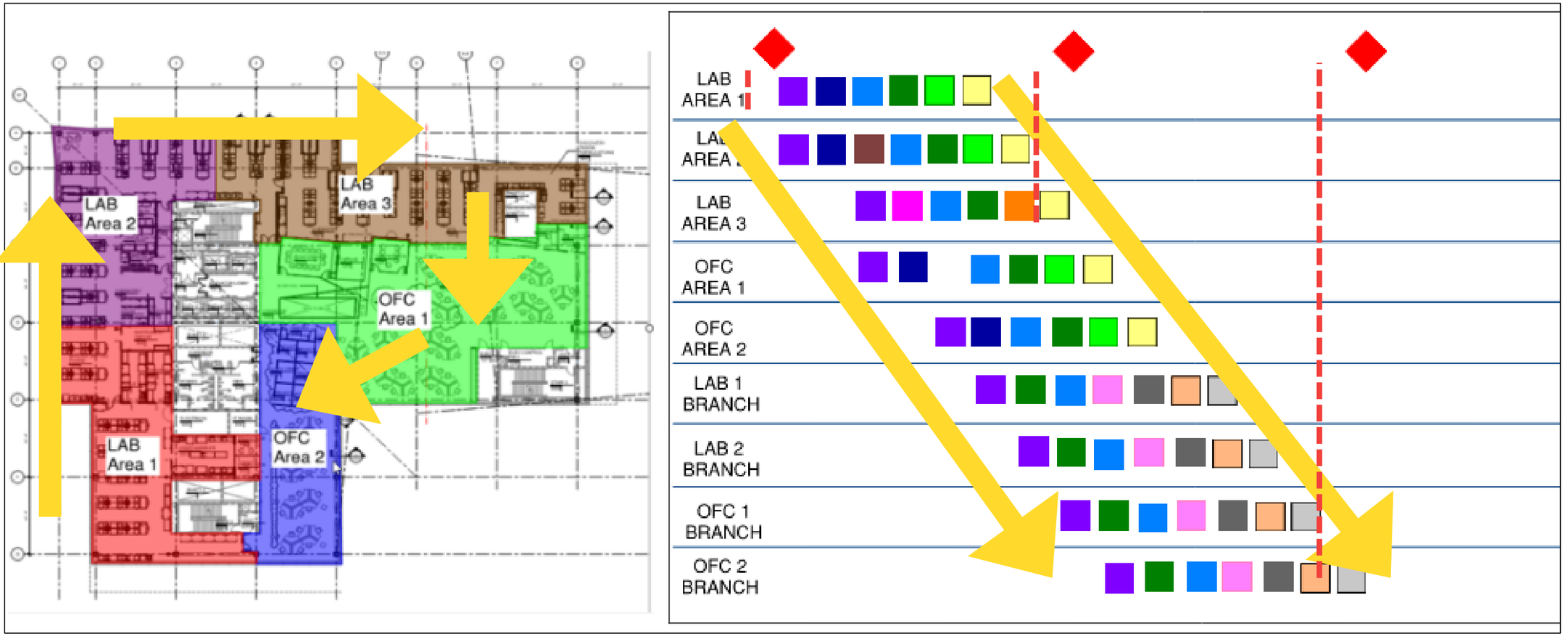
In each area, the sequence reinforces the direction. This is done by defining the Parade of Trades (e.g., the Electrician must follow the Framer).

Action: Define the order of steps required to complete the work (e.g., Electrical → Drywall → Paint). **Pay special attention to utility crossings and overhead MEP/F sequences!**

Result: This sequence of trades dictates the directional movement through the zones. When the Electrician finishes Zone 1, they move to Zone 2; the Drywall crew follows them into Zone 1, and so on.

Specificity: The “Train of Works”

The **“Train of Works”** is the specific sequence that groups the tasks and arranges their movement to keep the work flowing and prevent stacking.



*Binninger, M., Dlouhy, J., and Haghsheno, S. (2017). "Technical Takt Planning and Takt Control in Construction."

“Bias Buster” Exercise

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Think about how our own actions accidentally “kill” great ideas. **This IS NOT about blaming**.
it's about seeing patterns so we can interrupt them.

3 Minutes

Share an experience you have witnessed, or done yourself, that **blocked creativity** or shut down a new idea in a group setting.

Examples:

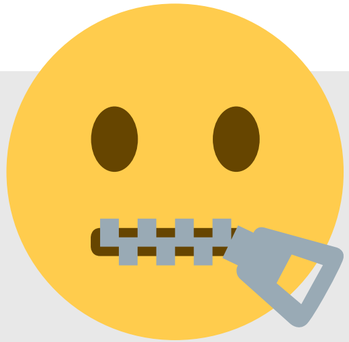
“At the staff meeting, my manager checked his email on his phone while I was discussing next week’s pull planning session”

“The Architect filled out one sticky that said “100% CD’s COMPLETE” and then left after 10 minutes.”

“The Superintendent put dates from the P6 schedule as the only milestones to pull from and yelled at us to ‘STOP SAND BAGGING’.”

3 Minutes

Reflection - What was the impact on the person, the idea, or the team’s momentum?



Common Behaviors

- “We tried that before”
- Dominating the Conversation
- Sighing/rolling eyes

Impact

- Withdrawal/Silence
- Reduced Trust
- Lower Quality of Follow Up Ideas

Behaviors =/= Intent: Even small, non-malicious action (like a looking at your phone) has an impact.

The True Cost of Silence: the tangible loss incurred when a bad assumption is allowed to become an action or a decision because no one voiced a necessary concern, challenge, or alternative view.

Image of

Framework For Practice: Pillar 2 - Adaptation

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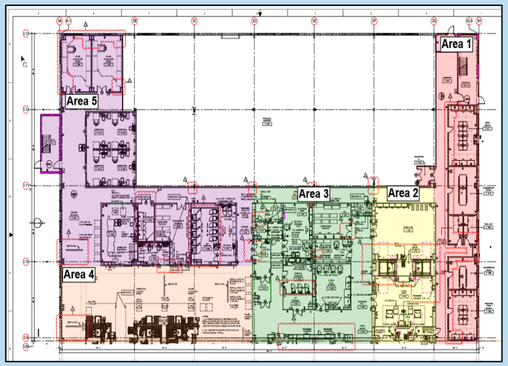
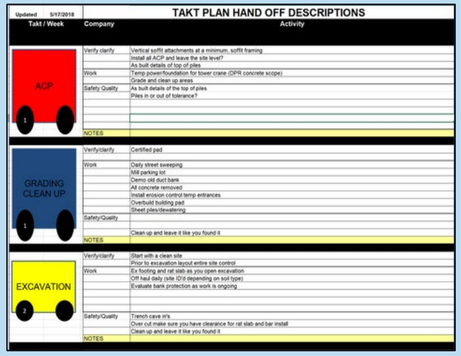
The Rules of Visual Planning

Use a shared language that can be **adapted by everyone** participating.

Color Legend



Defined Zones



Task Descriptions
Hand Offs

Adapting Through Reliable Promising

1. A clear request.
2. well-defined Conditions of Satisfaction.
3. An explicit “Yes” or “No” commitment.

Adapting for Flow

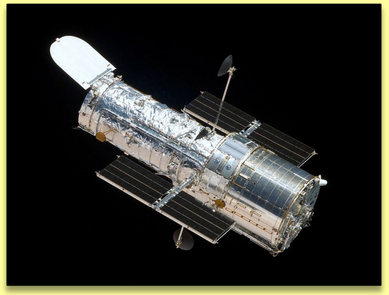
Using The Theory of Constraints (ToC)

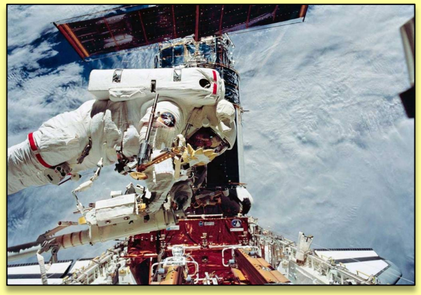
Identify & Focus on the Constraint.

Protect the Constraint. Ensure all other tasks support the constraint’s operation.

Re-sequence Non-Constrained Work: Re-arrange tasks for non-constrained resources to ensure they support the smooth flow through the constraint.
Why?

1. **It does not speed up the overall schedule**, because the constraint is still the one dictating how fast the phase is completed.
2. **Completing tasks too quickly introduces mistakes.**





Adaptation: Optimal Viewing

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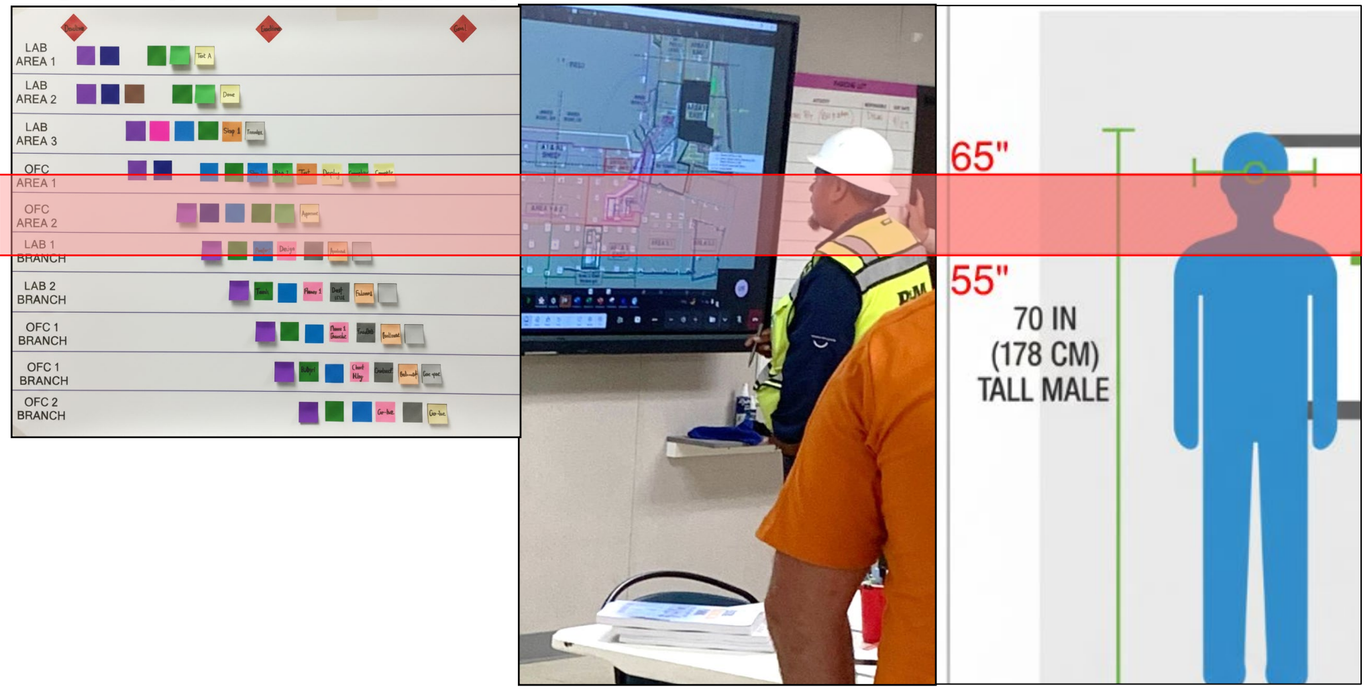
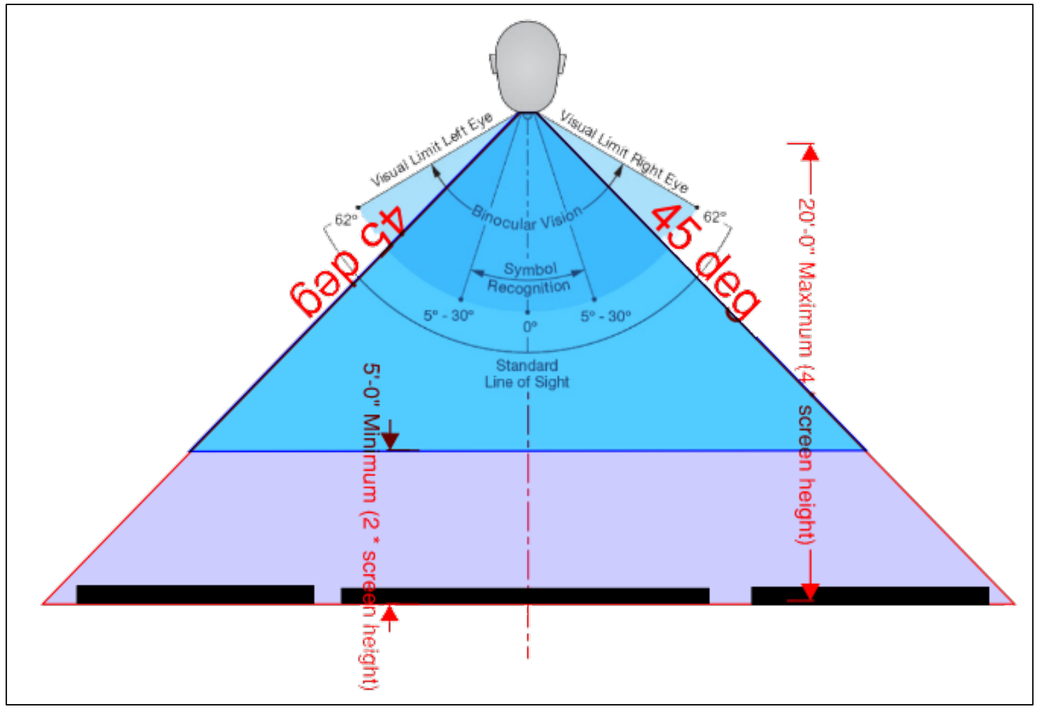
The Pull Plan and the Projection Screen are the main visual workspaces

- **The center of the primary working area should be between 55 and 65 inches (140–165 cm) from the floor.**
- **Maximum Viewing Angle:** Position the chart and screen so no participant is viewing it at an angle greater than **45 degrees off-center.**
- **Distance:** The closest viewer should be **no nearer than 2 times the chart's height**, and the farthest viewer **no further than 4 times the chart's height**.

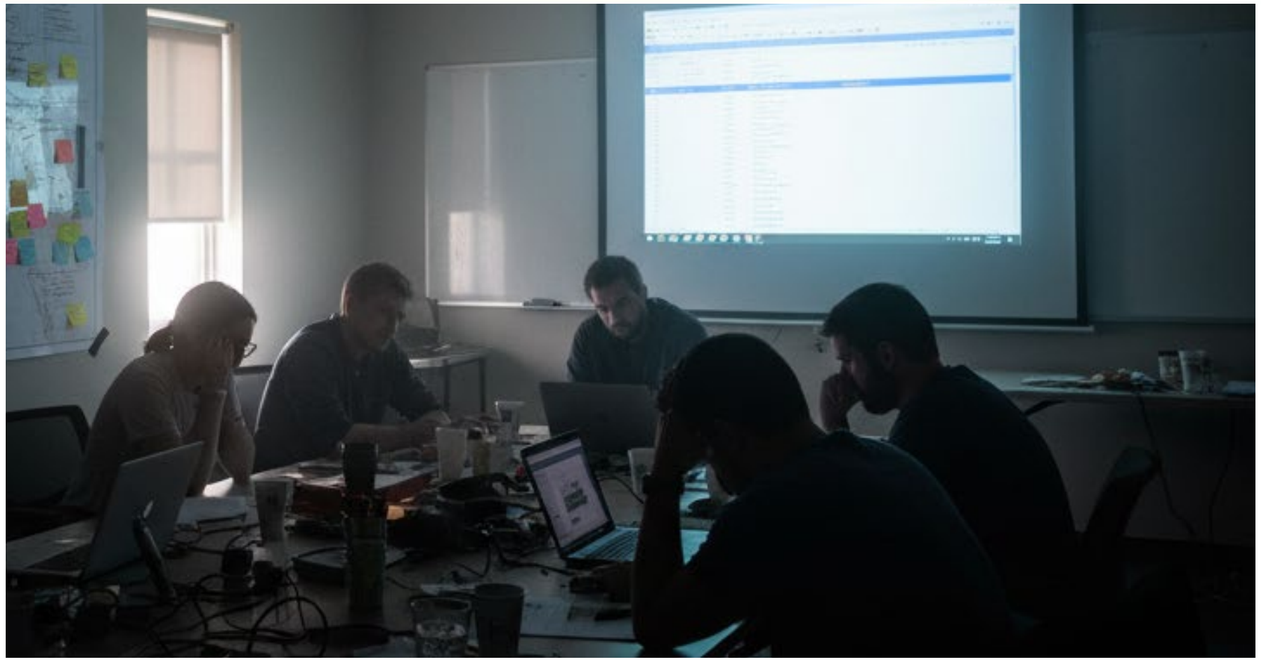
OPTIMAL VIEWING HEIGHT

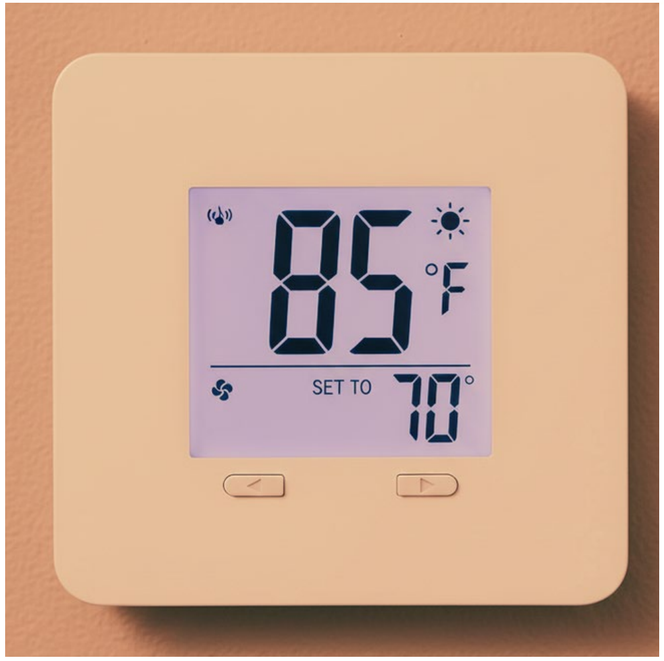


OPTIMAL VIEWING ANGLE



Adaptation: Environment





Poor lighting, unstable temperatures, and low air quality hinder collaboration and critical thinking because they force the brain to spend precious mental energy managing physical stress instead of focusing on the task at hand.

Common Symptoms:

EYE STRAIN AND FATIGUE

FEELING SLUGGISH AND DROWSY

DIFFICULTY SUSTAINING ATTENTION

Production Plans

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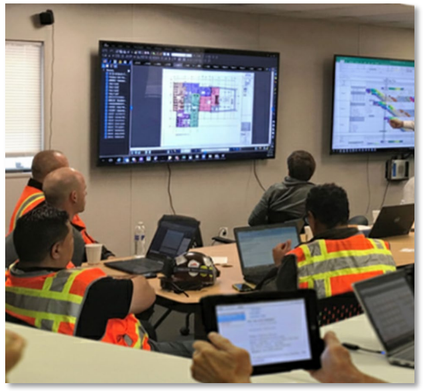
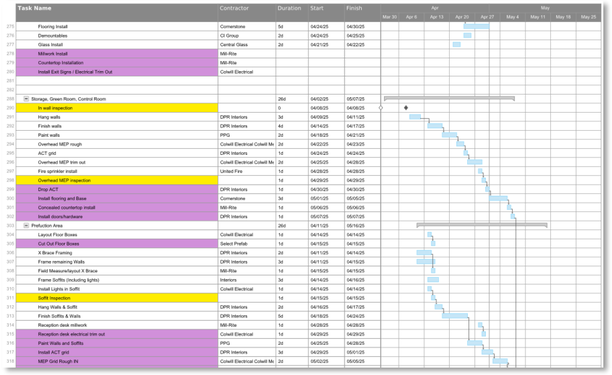
1. The Team Creates the Sequence - The Last Planners— map out the best order of work and define the crucial **handoffs**.

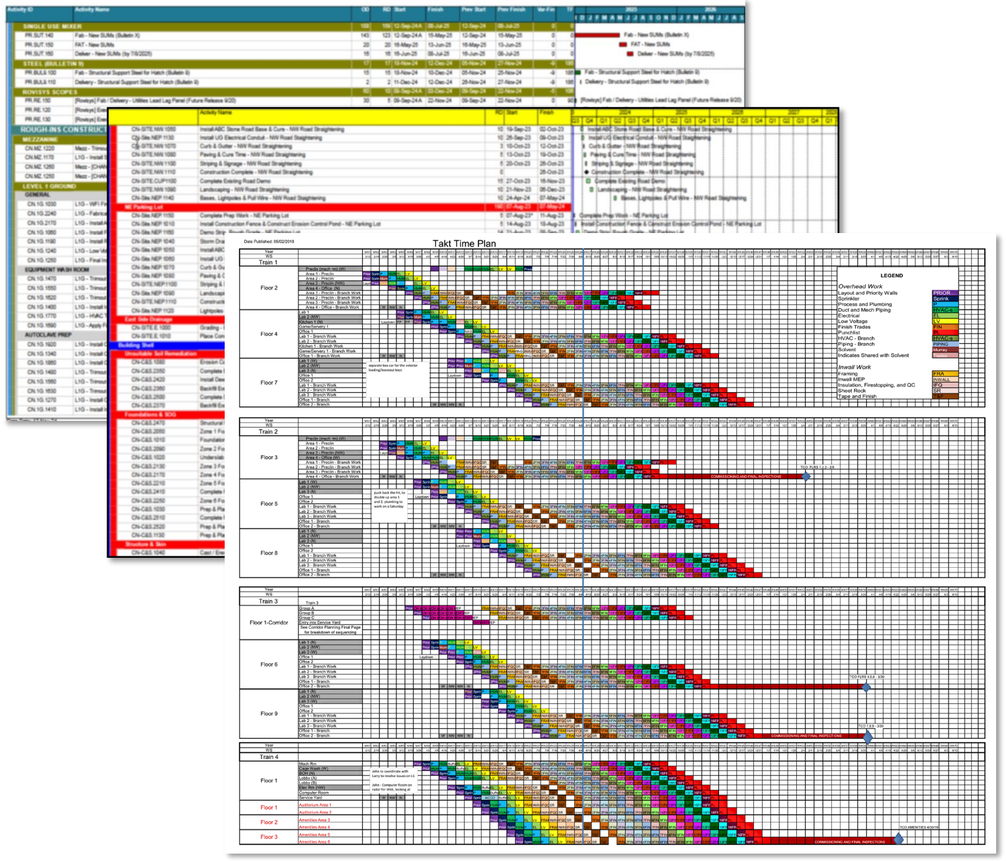


2. The System Aligns the Plan - The system takes the sequence and makes it realistic. by making work ready (clearing constraints) and ensuring resources are available

Output: A workable, validated workflow.



3. The Schedule Sets the Dates - This is the last step that **sets the dates**, turning the workflow into an actionable schedule with firm commitments.



Summary of Beyond Post-Its

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We focused on overcoming problems with rigid plans with the practice of **Specificity in Preparation** and **Adaptation in Execution.**

We learned specificity can be built by focusing on facts and data. **Work Density, Work Direction, and The “Train” of Works.**

Adaptation is built by ensuring the **environment** and the team is **prepared** and has an **optimal view.**

We addressed collaboration blockers with the **"Bias Buster"** exercise, realizing that behaviors which reduce trust leads to the **cost of silence.**

Contact Us

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In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.

Thank you for attending this presentation.
Enjoy the rest of the 27th Annual LCI Congress!