



Lean Construction Institute  
Immersive Education Program

# Last Planner System® in Design Practical Application

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October 24, 2023



# Introductions



*James Bond's  
Aston Martin DB5*

- Name
- Role
- Company
- Dream Car



*Knight Rider KITT  
Pontiac Trans Am*



*Little Red Corvette*



*Animal House Deathmobile*



*Italian Job Mini Cooper*



*DeLorean Time  
Machine*



*Baby Driver Surbaru WRX*



*Fast and the Furious Dodge Charger*



*1966 Batmobile*



*Pink Cadillac*

# Learning Objectives



Participants will gain a deeper understanding of the foundational principles of each of the 5 connected conversations of LPS® in Design.



Participants will engage in all the connected conversations of LPS® from Milestone Planning to weekly or daily interaction through practical application.



Participants will experience the process of work register management of commitments and to identify/remove constraints.

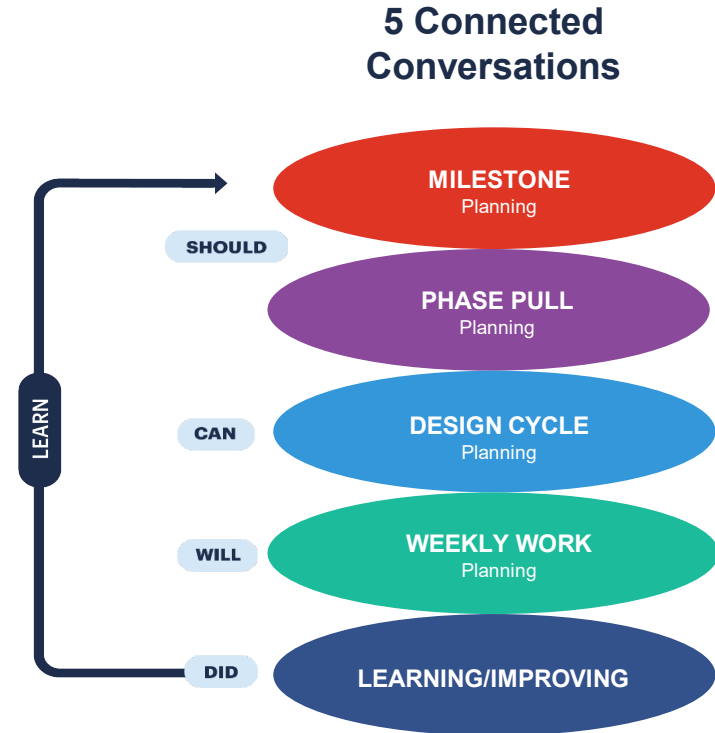


Participants will gain practical insight to improve work hand off reliability utilizing LPS tools and metrics.

# Learning Overview



1. Why Last Planner System
2. LPS Overview
3. Milestone Planning
4. Phase Pull Planning
5. Design Cycle Planning
6. Weekly Work Planning
7. Learning/Improving



# Rules of Engagement



This is a safe zone



Use E.L.M.O.



Everyone has equal status



Silence phones



Speak up and share your ideas



Be focused and engaged



Actively listen to others



Stay on time



One conversation at a time



Have fun!

# Last Planner System in Design



**1:00 PM** – Introductions

**1:05 PM** – Last Planner System® Design

**2:15 PM** – Break 15 Minutes

**3:30 PM** – Break 15 Minutes

**4:50 PM** – Wrap Up & Plus/Delta

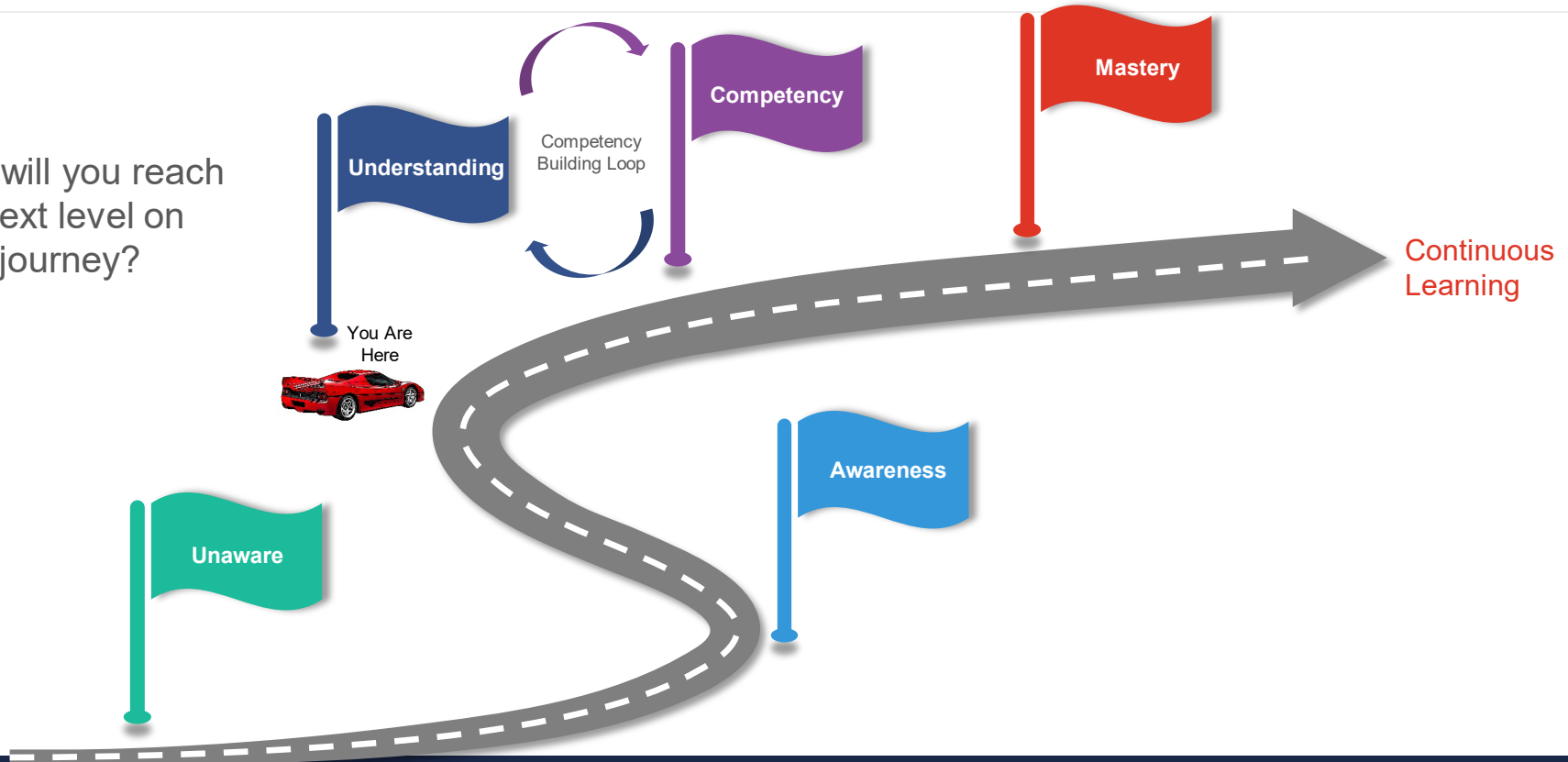
**5:00 PM** – Adjourn





# Lean Journey to Mastery

How will you reach the next level on your journey?



# Last Planner System Trademark

The Last Planner System® is a registered trademark of the *Lean Construction Institute*:

- Last Planner System®
- LPS®
- Last Planner® (In reference to the person not the system)







## Assign Team Roles:

Architect

Civil & Landscape

Structure

MEP

Interiors

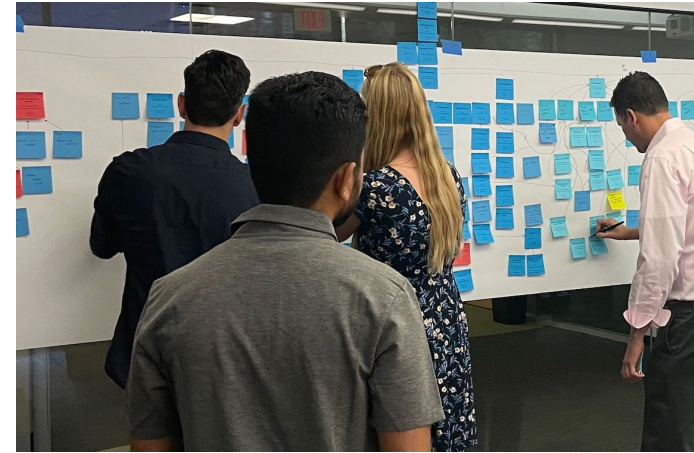
Preconstruction

Owner/End-User

# LPS In Design Key Principles

Experienced Lean practitioners state that LPS aids in:

- Align the team in information flow, controlling how information gets shared.
- Really understand needs to start an activity (what releases work?)
- Identifying key decision points – what info is needed & when. Who is needed and when to support decisions.
- Using pull to value stream map milestones, hot topics and key deliverables.
- Aligning the team with the owner's information sharing and resources needs with stakeholders.



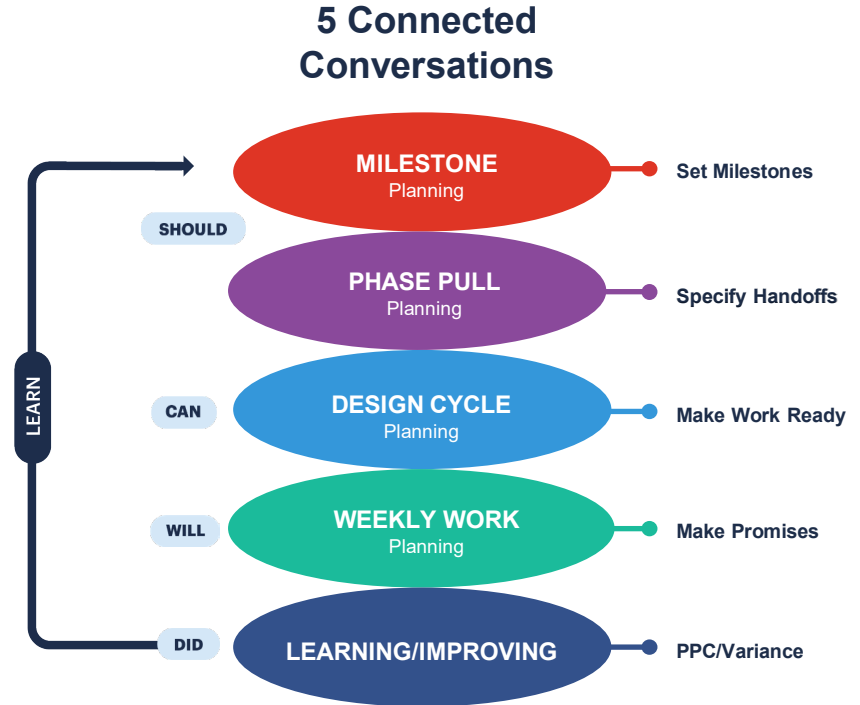
Courtesy of Devenney Group



# 5 Connected Conversations Of LPS

LPS is a commitment-based system integrating 5 connected planning conversations:

1. Milestone Planning (Should)
2. Phase Pull Planning (Should)
3. Design Cycle Planning (Can)
4. Weekly Work Planning (Will)
5. Learning & Improving (Did/Learn)



# The Project – Heartland Middle School

The following slides outline “The Project”  
Business Case & relevant information



# Simulation Project



## Business Plan:

Business Plan  
Heartland Middle School

# Owner Business Case



**Owner:**  
Heartland City

**Mission Statement:**  
*Shaping tomorrow today.*  
*Elevating our community by elevating our kids.*



# Owner Business Case

- \$39MM Allowable Cost
  - Land, entitlements & utilities to site already established
- School must be open for academic year
  - (building ready by July for ~Mid-August class start)
- Design team has input to project delivery approach and will help owner group with relevant decisions/selections

# Allowable Cost Breakdown

Land is owned, entitlements and utilities to site complete

\$39,000,000

Total Project Funding

Including:

- Design
- Construction
- Community Engagement
- FF&E, Soft Costs (Permitting, etc)



# Owner's Program



	Department		IU's		Area
A	Administration		1		4,380
B	Student Services		0		2,500
C	Learning Commons		1		8,150
D	Basic Instructional Area		43		44,990
E	Career Explorations		7		11,860
F	Music & Theater		4		17,505
G	Physical Education		3		18,960
H	Food Service		0		10,610
J	Utilities & Services Areas		0		9,560
	Total Instructional Units (IU's)		59		
	Total Net Square Footage				128,520
	Assumed Grossing Factor				1.33
	Estimated Gross Square Footage				170,932

Note:

Other project required auto parking for 71 IU at 250 spaces and bus parking at 32 spaces.

# Project Site

- 6.8 Acre Parcel
- City has supplied main utilities to the site



# Owner Provided Value/CoS

## Quantitative

- Energy efficient design
  - Low monthly utility cost
  - High % of daylighting
  - Innovative water management system
- Meet the **Allowable Cost**
- 25% workforce inclusion (Underemployed / Community Residents – min. 10% each)
- Community engagement
  - Regularly engage with school board and community member events
- Regularly (weekly) updated progress signage at visible location
- Social Media Updates (min. 3 per week)
- Robust, proactive protection of the safety of our workers and community:
  - Weekly team safety walk-throughs
  - Short-falls remediated immediately (no more than 24 hours)
  - System for immediate reporting of safety problems identified by workers and community members
- All team members earn a fair profit
- Community stakeholder involvement in design process (e.g. advocate/advisory board involvement in design)



# Team-Developed CoS: Activity

## Team Developed Conditions of Satisfaction

- Review Owner Values/Mission Statement
- Develop CoS in alignment & incorporate team objective
- Ask us anything

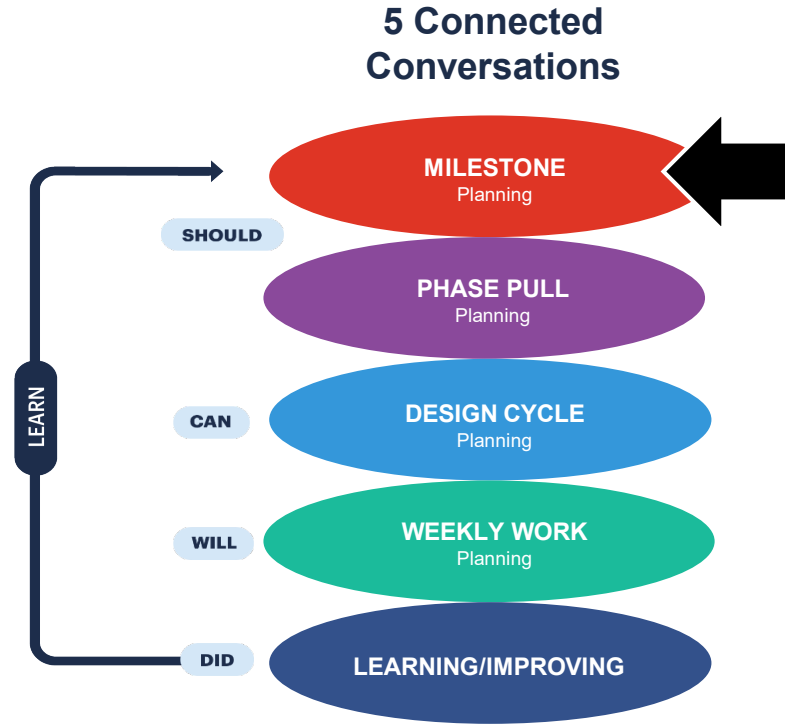
10 Minutes Group Exercise

# Milestone Planning

The first conversation of LPS is *Milestone Planning*.

The goal of Milestone Planning is for the team to align on and *set the milestones* for the project.

This starts the we “*should*” be able to do conversation.



# Re-Defining Design Milestones

## Traditional Milestones:

- Percent Complete Sets
  - 30/60/90
- Schematic, Design Development, Construction Documents

## Redefined Milestones:

- Handoffs of information
- Decisions, activities and deliverables to meet a specific release of part of the project.

# Creating The Milestone Plan



Courtesy of : The ReAlignment Group

# Think differently Milestone Planning

## Design Cycle Planning – Team Thinking Change

- Construction Pulling Design – Integration
- As procurement overlaps design, what things need to get ‘frozen’ earlier and how do we define
- No pencils down review periods
- How it looks on IPD vs non-IPD flow of design
- Design for releasing work, releasing other team members – vs traditionally described sets.
- Not based on percentages



# Types of Milestones

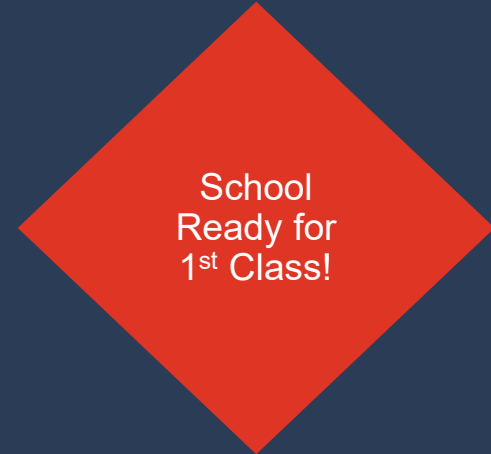
- “Frozen” plans
- Early construction packages
- Long lead items
- Owner approval requirements (board reviews, etc.)
- Validation of scope and cost alignment

# Milestone Exercise



## Develop Project Milestone Plan

- Color Code by phase/type of activity
- Pull back from final milestone
- Stay high level
- Refrain from:
  - 30/60/90
  - SD/DD/Final CD
  - Incorporate cost feedback
- Have fun!

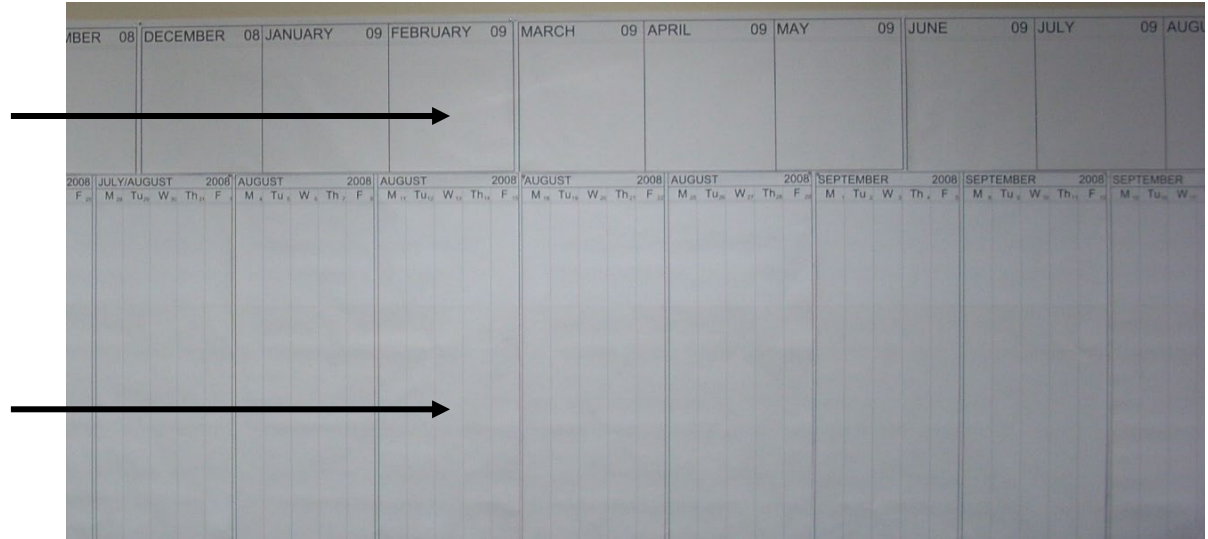


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45 Minutes Group Exercise

# Setting Up To Plan

This set up includes a time scale (months) to transfer the Milestone Plan to once dates are determined.



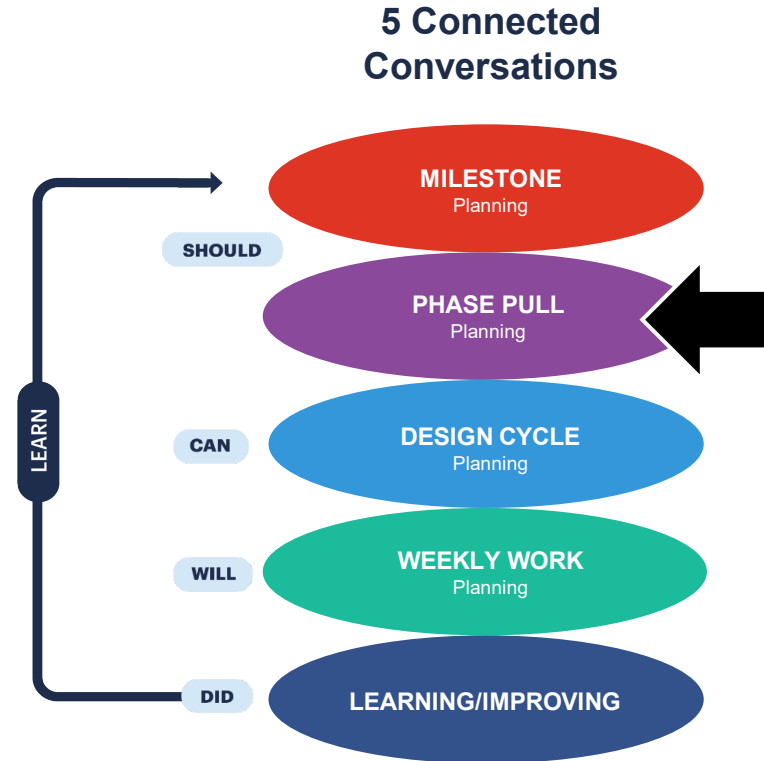
This set up includes a time scale (weeks & days) for the next level Phase Pull Planning.

# Phase Pull Planning

The second conversation of LPS is *Phase Pull Planning*.

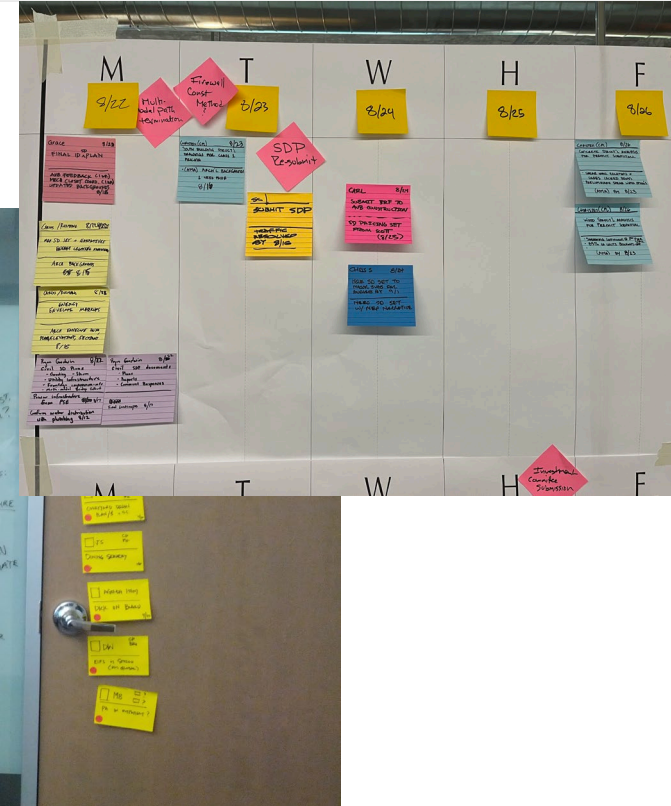
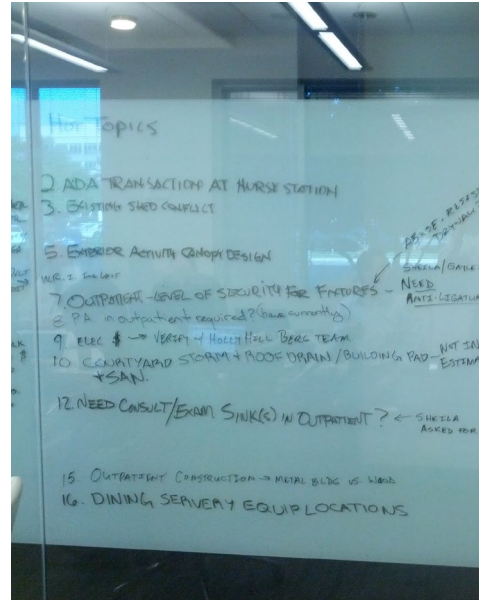
The goal of Phase Pull Planning is for the team to determine the key *handoffs* of work or information needed to deliver a milestone.

This continues the we “*should*” be able to do conversation.



## Uses of Pull in Design Planning

- Deliverables
- Hot Topics/Issues
- Key Client Decisions
- Production Plans





# Think differently Phase Pull Planning

Design Cycle Planning – How does this change the design thought process?

- Organized process for defining design decisions
- Cycle based planning – different order than what we're used to
- Different packages progress at different speeds
- List of decisions for each deliverable

# Think differently Phase Pull Planning

Design Cycle Planning – How does this change the design thought process?

- focus on what each package is needed for and what decisions are needed for each (are we giving customers more than they need?)
- Knowing what can wait
- Budget according to schedule
- Be comfortable with chaos

# Using the Risk & Opportunity Register

Acknowledge that a revised workflow may cause the team to undertake certain risks

ID No.	Issue	Condition of Satisfaction	probability	Cost	Response	Champion	Need by
St-01	Lead time for steel	Schedule adherence		\$0 to \$20,000	Assume higher weight of rooftop units for structural calculations to advance steel design dates	Sue Smith	8/1/2023



# Key for Pull / Work Cycle Tags

The **Performer's** name  
(not company) is  
placed on the tag.

Note additional  
information that adds  
clarity to the plan  
includes **who** a request  
is made of and the **date**  
the request is needed.

Ralph M	June 4
Final set of documents to Contractor for Permit 3 sets hard copy and electronic format	
<b>Documents from:</b> MEP & FP, Structural, Furniture Vendor, Internal Arch, Interior Design & Check from Owner By _____	

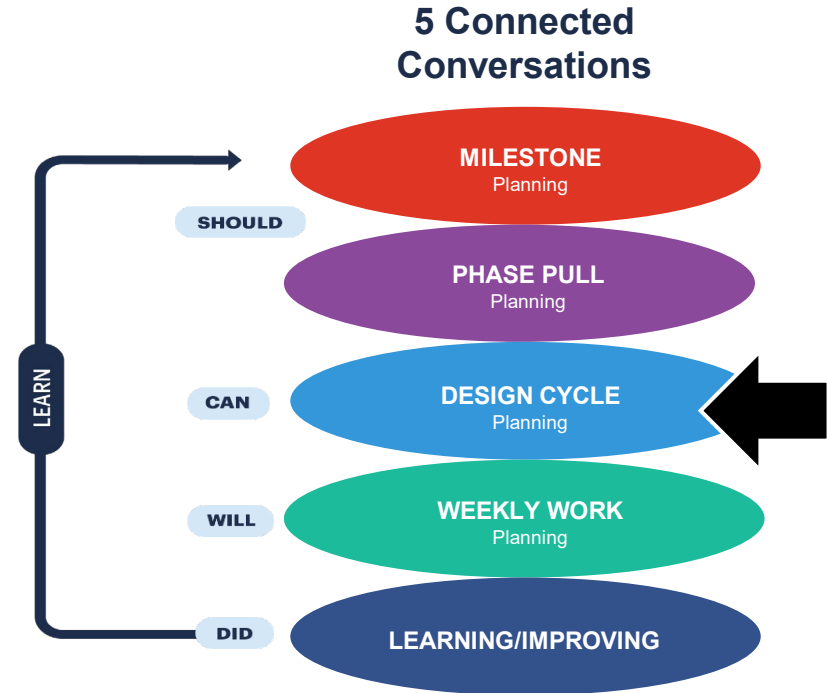
Upon negotiation of  
the Conditions of  
Satisfaction including  
a **delivery date**, the  
date is noted.

# Design Cycle Planning

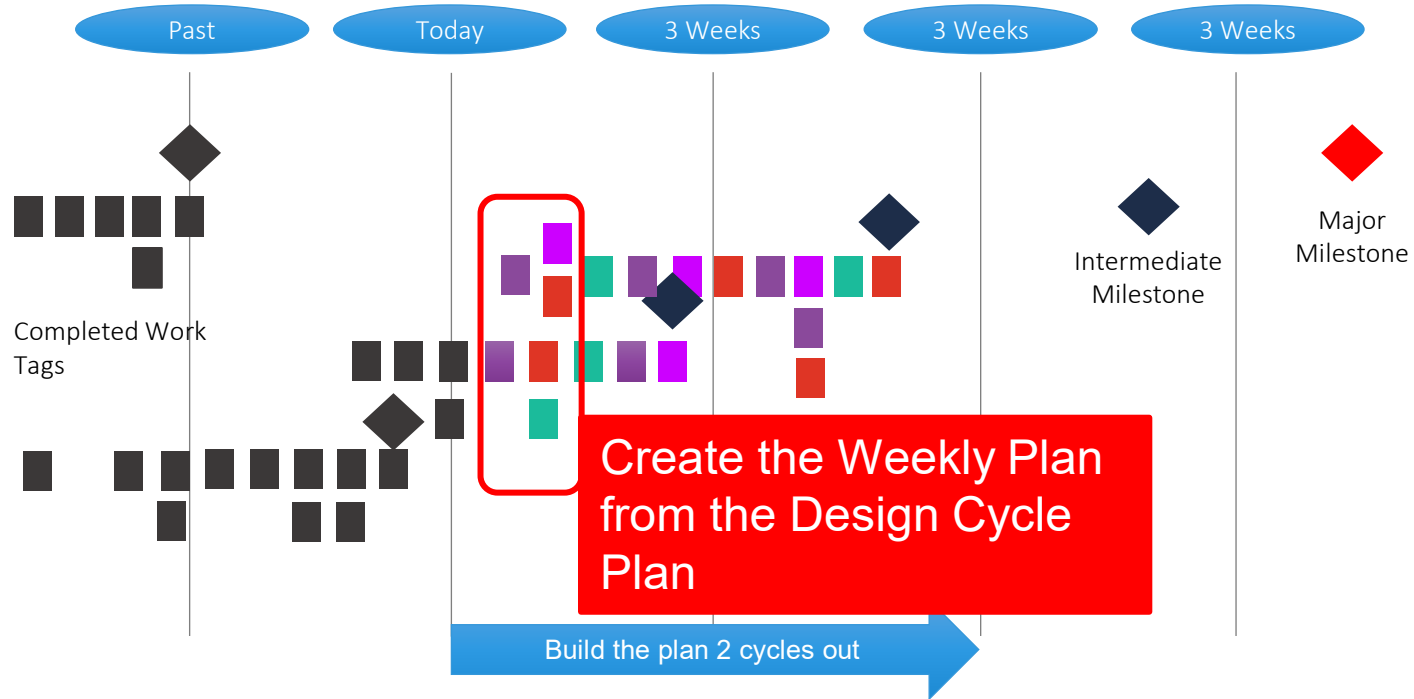
The third conversation of LPS is *Design Cycle Planning*.

The goal of this level is to continuously *advance the level of detail* of the Phase Pull Plan in 2-3 week cycles of time.

The conversation is we “*can*” do this.



# Advancing The Plan





# Work Cycle Planning

## Develop Design Work Cycle Plan

Name	Deliver Date
<b>MY PROMISE</b> <ul style="list-style-type: none"><li>•What I will Deliver<ul style="list-style-type: none"><li>•Be specific</li><li>•Small batch</li></ul></li></ul>	
<b>MY REQUEST (S)</b> <ul style="list-style-type: none"><li>•What I need from others<ul style="list-style-type: none"><li>•Be specific</li><li>•Person /date</li></ul></li></ul>	

- Put a date scale at top (Weeks)
- Pick a milestone that involves many participants or Hot Topic/Issue
- Color Code by discipline
- Define the milestone outcome
- Pull back from the milestone

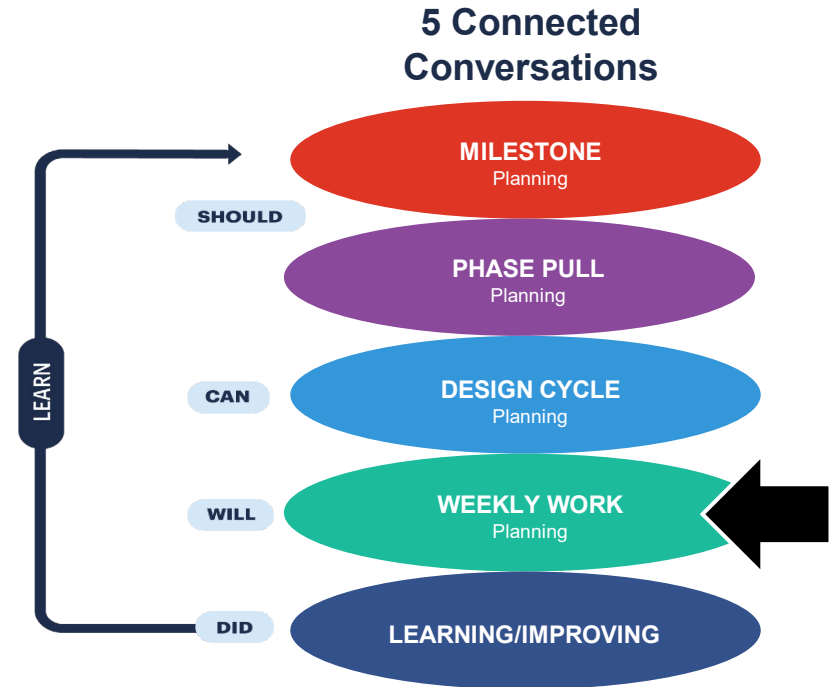
30 min Groups at Wall



# Weekly Plan Check-Ins

The fourth conversation of LPS is *Weekly Work Planning*.

The goal of this level is for the Last Planners to *check in on/adjust commitments* for the current week.





# The Work Register

The **Work Register** is a combination of :

- The **Commitment Log** to stay on track with the commitments made.
- The **Constraint Log** to track the roadblocks that arise for any commitment.

## PROJECT:

## CONSTRAINT:

Milestone	Location	Commitment	Performer	Plan Date	Estimated Effort—Days	Task Status	Constraint	Responsible Individual	Resolution Needed	Resolution Promised Date	Date Resolved/ New Plan

**COMMITMENT LOG**

**CONSTRAINT LOG**

# Conducting Check-in Sessions

*Check-in Sessions* are short, high energy touch points conducted standing.

Each person answers:

1. What promises I fulfilled. (Declaring Done)
2. What promises I will fulfill. (Managing Commitment)
3. What are my constraints or concerns. (Constraint management)
4. What is the status of my commitments overall. (Am I on track).



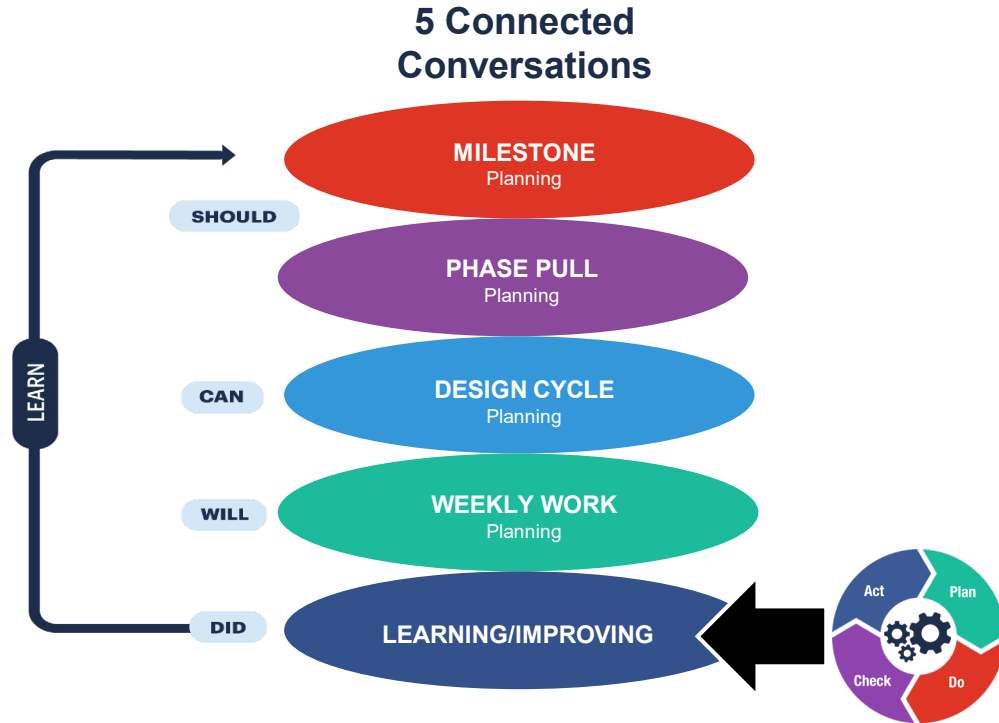


# Learning/Improving

The fifth conversation is *Learning/Improving*.

The goal is for the team to *learn* from the cycle and take *actions for improving* going forward fulfilling PDCA.

The conversation is what we “*Did*” and “*Learned*”.







# Learning From Check-in Sessions

The *Commitment* and *Constraint* Logs are updated live during the Check-in Session.

The *Percent Plan Complete* (PPC) is calculated for the period or week.

PPC is the basic measure of how well the *planning system is working*

PROJECT:

CONSTRAINT:

Milestone	Location	Commitment	Performer	Plan Date	Estimated Effort—Days	Task Status	Constraint	Responsible Individual	Resolution Needed	Resolution Promised Date	Date Resolved/ New Plan





# Reasons for Variance

## *Design Phase:*

1. Overcommitted
2. Miscommunication
3. Previous work not complete
4. Change in work plan
5. Outside constraint
6. Resources not available
7. Other



# Weekly Work Register Check-In



## “Stand & Deliver”

- Round robin report out
- Track variances

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10 min Groups at Wall

# Discussion Question



## How to Implement?

What new actions or ideas that you learned today can you take back to your project?

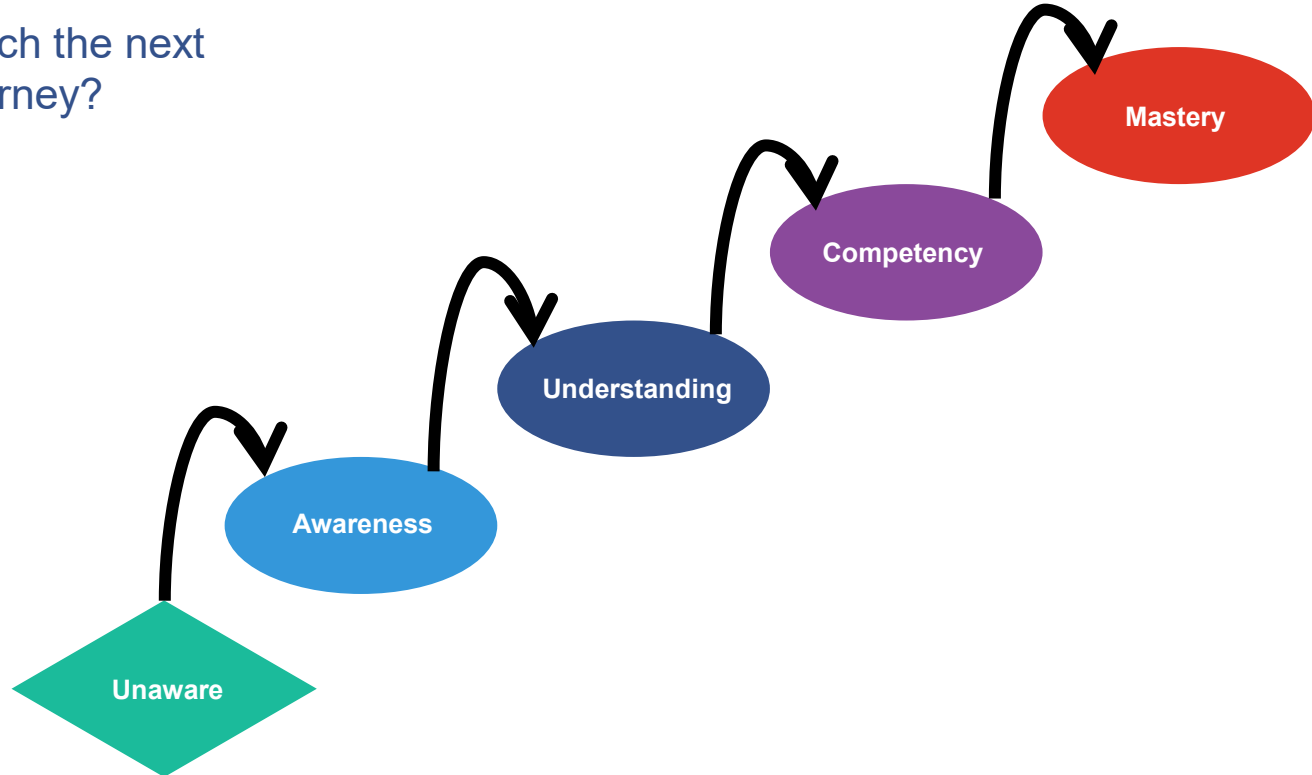
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10 min table conversation



# Lean Journey to Mastery

How will you reach the next level on your journey?



# More on Learning

## Books:



## Events:

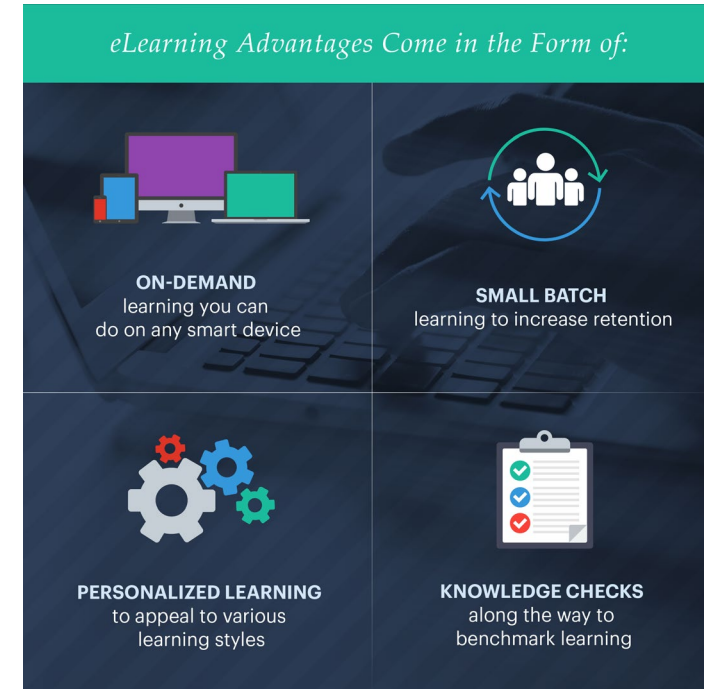
- Local Community of Practice
- Congress (October)
- Design Forum (May)

Start learning now:

[www.LeanConstruction.org](http://www.LeanConstruction.org)

# eLearning


- **Learn on your own time** without taking time off project work
- **Increase knowledge retention by up to 60%** with interactive, small-batch learning
- **Access field resources** to use with teams
- **Earn 1.5 CEUs** (self report to AGC CM-Lean and/or AIA)
- **Incentivize with LCI badging credentials** for email signatures and a certificate of completion
- **Save money** by eliminating instructor and travel expenses
- **Enterprise-level model:** unlimited access to all our eLearning courses directly from your own internal Learning Center or Learning Management System.



# eLearning Courses

Available now:

- Introduction to the Last Planner System®
- Introduction to Lean Project Delivery
- Lean in the Design Phase
- Effective Big Room
- Target Value Delivery




Introduction to the  
Last Planner® System

Please enter your first name below  
then click the button to begin.

type your text here

**BEGIN**



**WELCOME**

This course will allow you to gain in-depth insight to the practical application of the Last Planner® System (LPS) through multimedia, hands-on interactions, diagrams, worksheets, and more. The key achievable goal of this course is to learn how to engage at all five levels of LPS effectively on a day-to-day basis with a team implementing the system.

**LEAN IN THE DESIGN PHASE**



**1**

OVERVIEW

**2**

CONNECTING PEOPLE

**3**

CONNECTING PRINCIPLES

**4**

CONNECTING PRACTICES

INTRODUCTION TO LEAN PROJECT DELIVERY

The key achievable goal of this course is to prepare and enable team members with a foundational understanding of Lean approaches for daily use within a project environment.

<div style="background-color: #0056b3; color: white; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">1</div> <p><b>LPD OVERVIEW</b></p>	<div style="background-color: #ff9900; color: white; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">2</div> <p><b>CONNECTING PEOPLE</b></p>	<div style="background-color: #008000; color: white; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">3</div> <p><b>CONNECTING PRINCIPLES</b></p>	<div style="background-color: #990000; color: white; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">4</div> <p><b>CONNECTING PRACTICES</b></p>
<p><b>LESSON 1:</b> Foundations of LPD</p> <p><b>LESSON 2:</b> Lean Project Delivery System</p> <p><b>LESSON 3:</b> Eight Wastes</p>	<p><b>LESSON 1:</b> High Performing Team Behavior</p> <p><b>LESSON 2:</b> Project Promise</p> <p><b>LESSON 3:</b> Conditions of Satisfaction (CoS)</p>	<p><b>LESSON 1:</b> Big Room</p> <p><b>LESSON 2:</b> Problem Solving</p> <p><b>LESSON 3:</b> Last Planner® System</p>	<p><b>LESSON 1:</b> Integrated Project Delivery</p> <p><b>LESSON 2:</b> LPD in Action</p> <p><b>LESSON 3:</b> Target Value Delivery</p>



# Questions?



# Learning Objectives Review



Participants will gain a deeper understanding of the foundational principles of each of the 5 connected conversations of LPS® in Design.



Participants will engage in all the connected conversations of LPS® from Milestone Planning to weekly or daily interaction through practical application.



Participants will experience the process of work register management of commitments and to identify/remove constraints.



Participants will gain practical insight to improve work hand off reliability utilizing LPS tools and metrics.



# Conduct Plus/Delta



Plus: What produced *value* during the session?



Delta: What could we *change to improve* the process or outcome?

+	▲

# Presenter Contact Information



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# LCI Website Information



[www.LeanConstruction.org](http://www.LeanConstruction.org)

