



Intermediate Last Planner System® Practical Application

September 18, 2026

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“LCI would like to acknowledge and thank the work cluster for their leadership, work and collaboration to create this workshop. Learning opportunities like this exist because people like them engage to create them.”

-Kristin Hill, LCI, Director, Education Programs

Christian Pikel, The ReAlignment Group

Eric Lusi, Lynx Lean Services

Houston Brown, Brasfield & Gorrie Constructors

Rebecca Snelling, JE Dunn Construction

Ryan Ring, JE Dunn Construction

Perry Thompson, Parsons Electric







Learning Objectives



Identify the essential foundational principles of each of the 5 connected conversations of LPS.



Engage in all of the connected conversations of LPS® from Milestone Planning to daily interaction through practical application.



Experience the process of constraint management to improve project workflow.



Gain practical insight to effectively use Percent Plan Complete (PPC) and variance to improve reliable project plan execution.



Discussion Question: Group

What struggles have you experienced or observed while implementing LPS?

Group Discussion
10 minutes

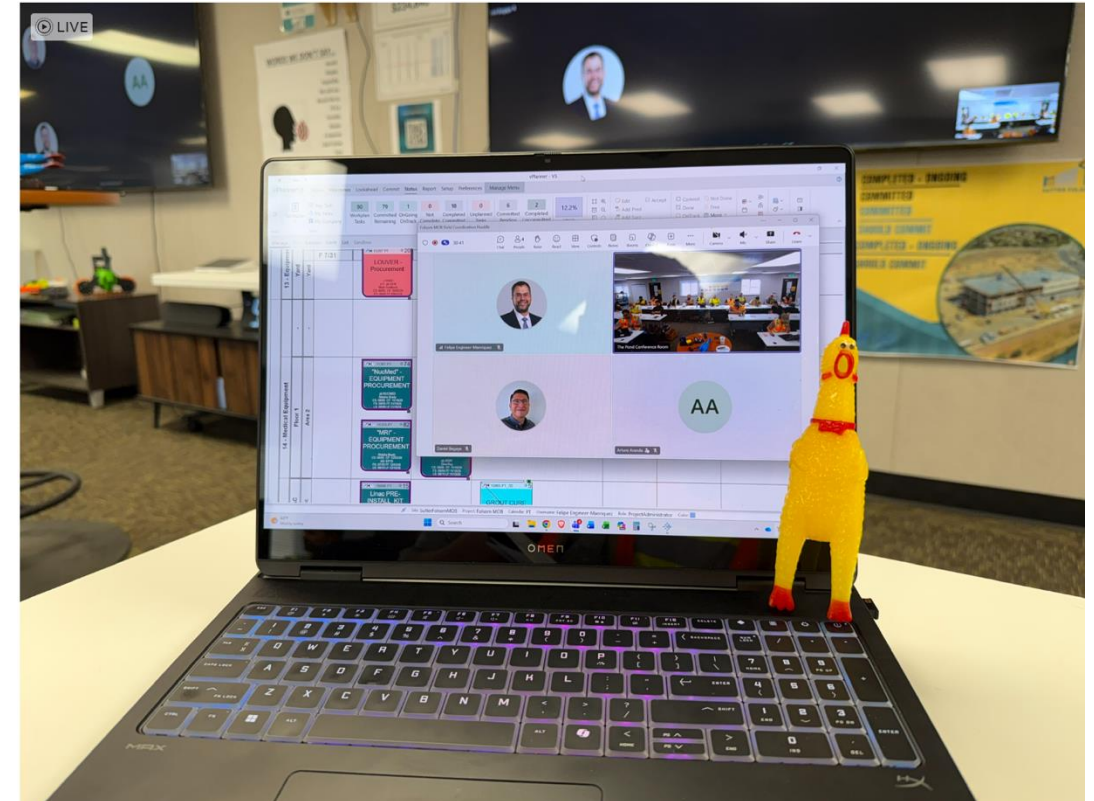


Photo Courtesy of: The Boldt Company



Rules of Engagement



This is a safe zone



Everyone has equal status



Speak up and share your ideas



Actively listen to others



One conversation at a time



Use E.L.M.O.



Silence phones



Be focused and engaged



Stay on time

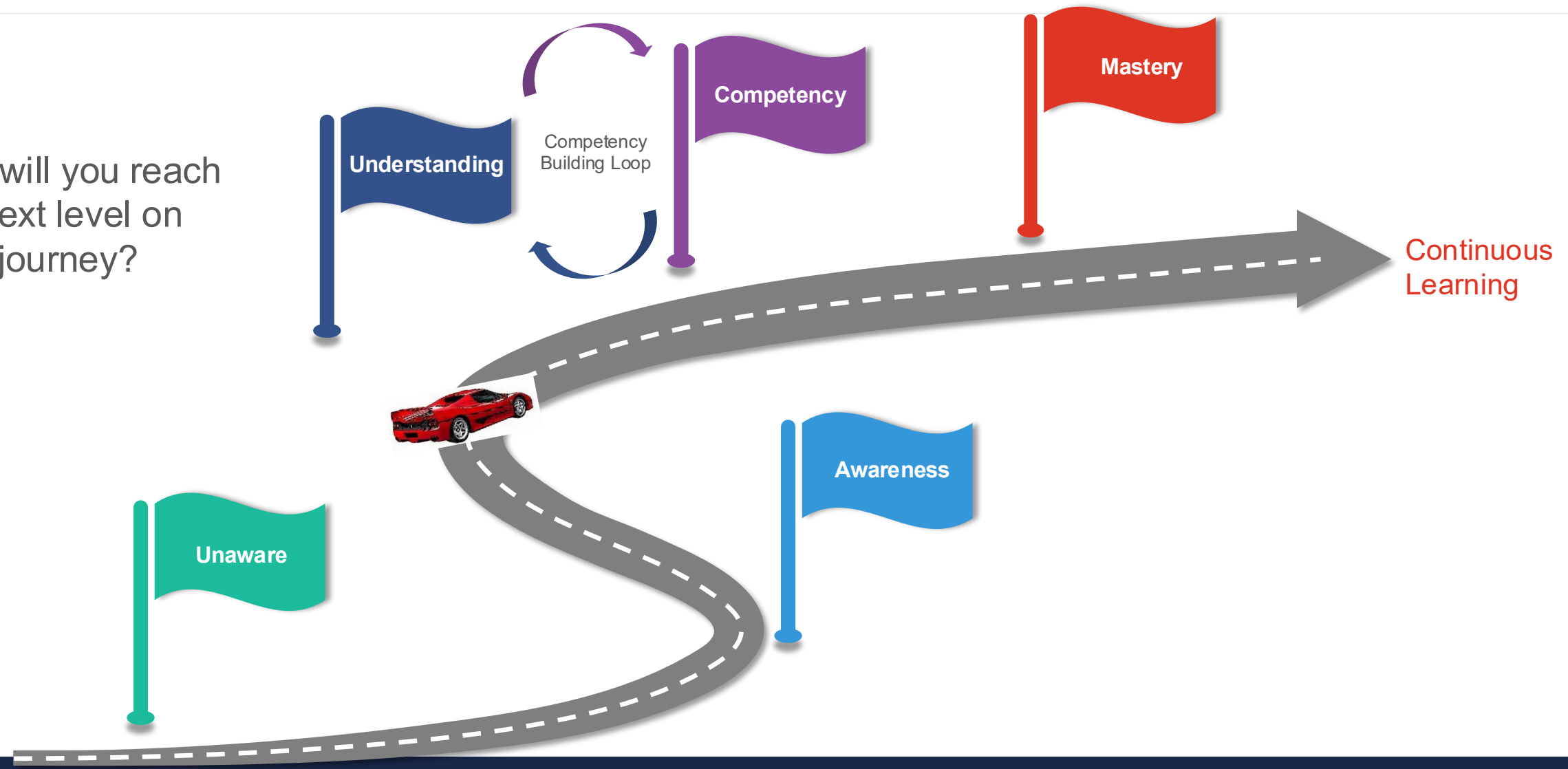


Have fun!



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)





Definitions

Lean:

A culture of respect and continuous improvement aimed at creating more **value for the customer** while identifying and eliminating waste.

Lean Project Delivery System:

An organized implementation of Lean Principles and Tools, **of which LPS is one**, combined to allow a team to operate in unison to create flow.





Six Tenets of Lean and LPS

- 1 Respect People
- 2 Generate Value
- 3 Focus on Flow
- 4 Eliminate Waste
- 5 Continuously Improve
- 6 Optimize the Whole





Generating Value

If it is **not** something the client is *willing to pay for* - it is non-value added.

Everything that is *not value* is waste, and therefore should be eliminated, simplified or reduced.





Waste Defined

Waste is any activity that requires time or resources but *does not create value* as defined by the customer.



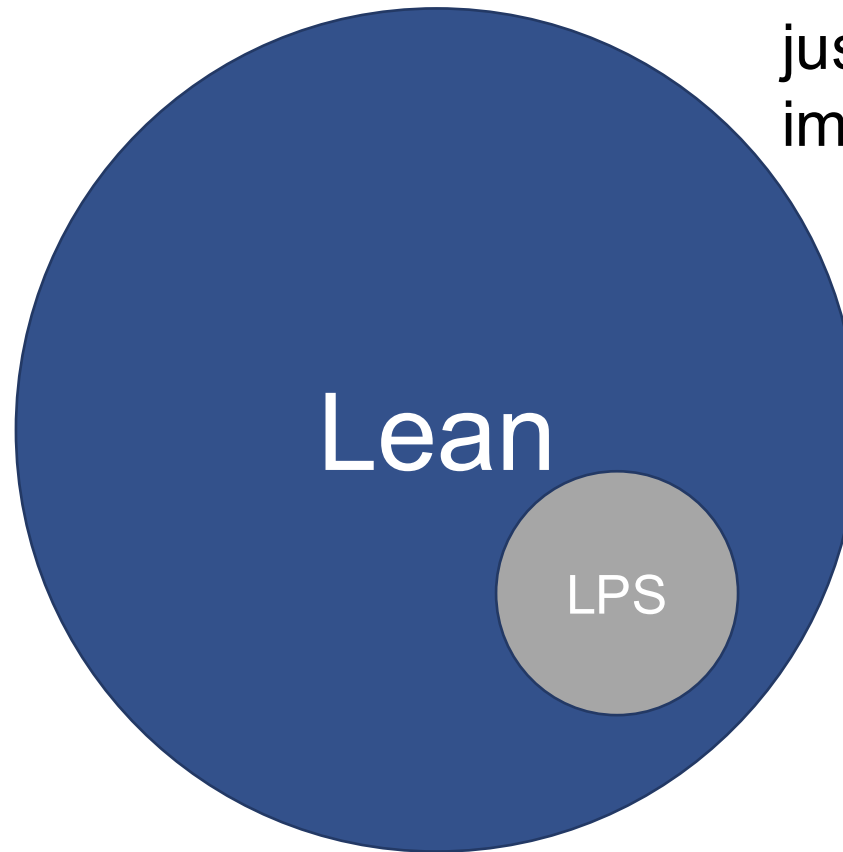
Eight Types of Waste - DOWNTIME

-  Over/Under Production
-  Waiting
-  Unnecessary Transportation
-  Over Processing
-  Excess Inventory
-  Unnecessary Motion
-  Defects
-  Unused Creativity of Team Members
(Not listening/Not speaking up)

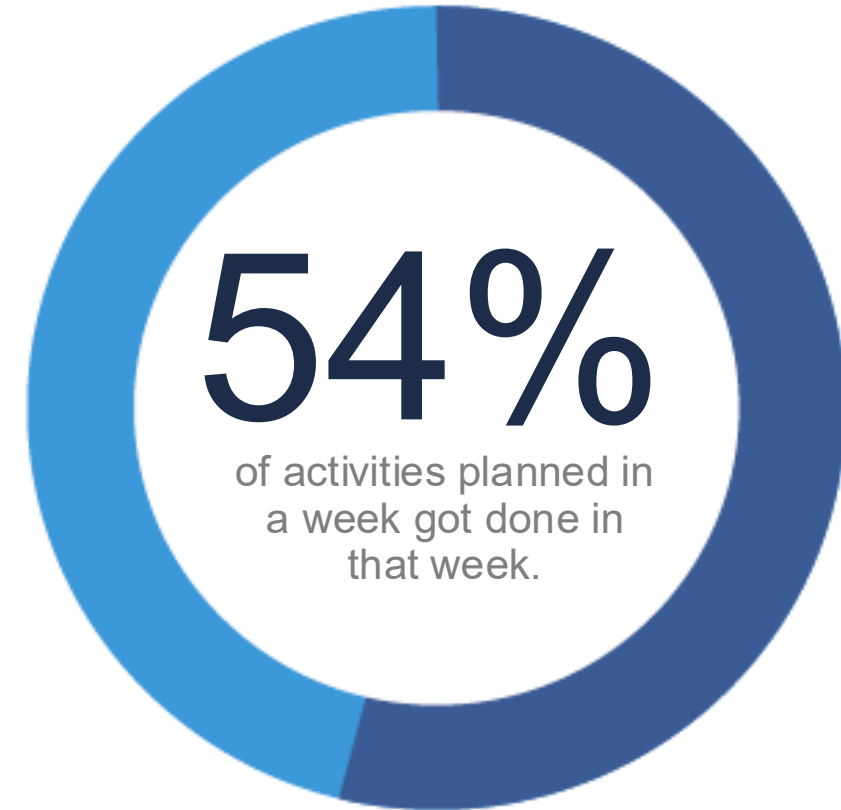
Where Can LPS Be Applied?

The Last Planner System supports a Lean Project **regardless** of the contract type or phase.

Lean is much more than just Last Planner System implementation.

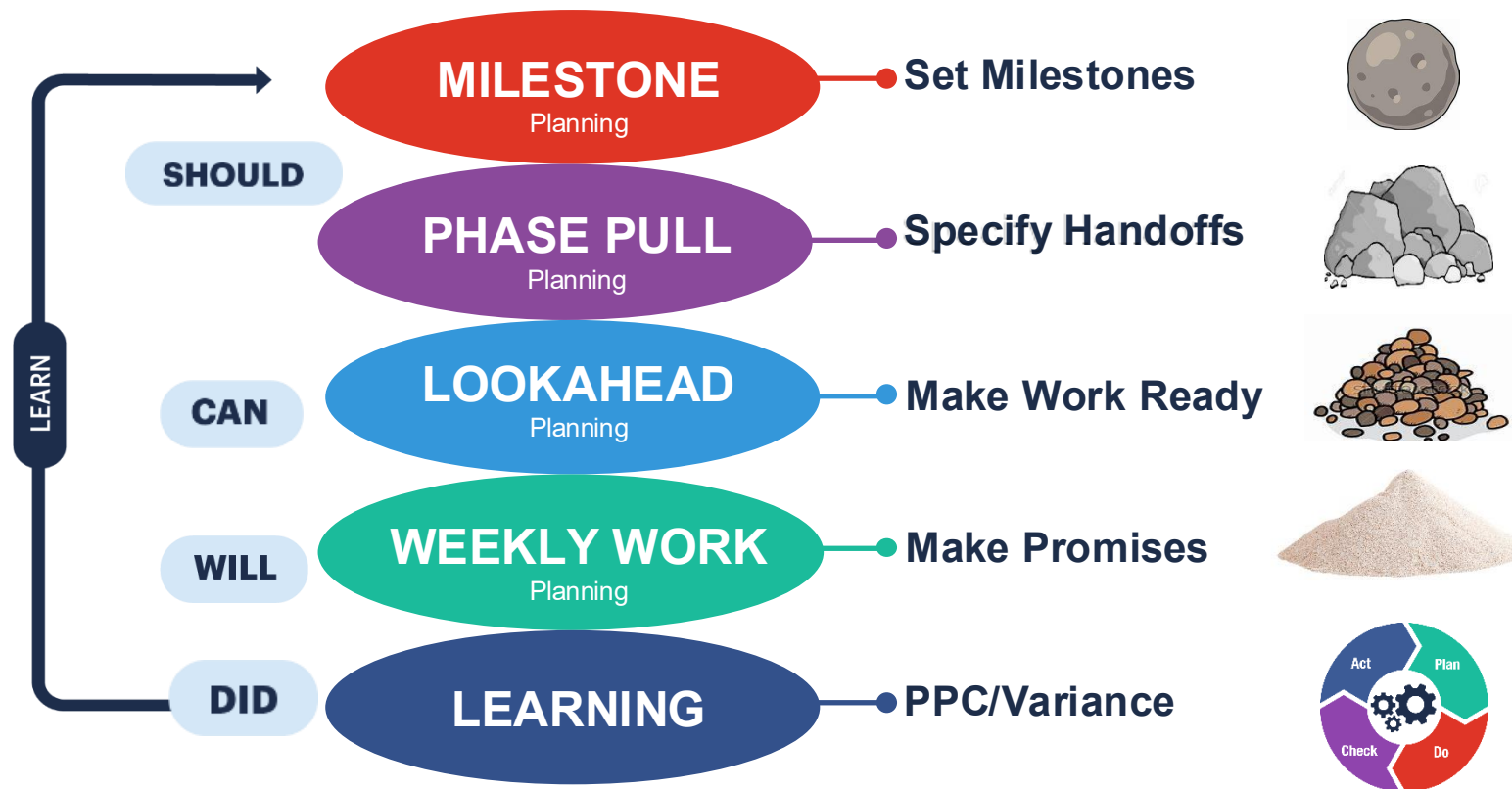


Brief History of LPS



Last Planner System Overview

5 Connected Conversations



Last Planner System Defined

The Last Planner System is a ***production planning system*** designed to produce predictable workflow and rapid learning in programming, design, construction and commissioning of projects.



System Defined

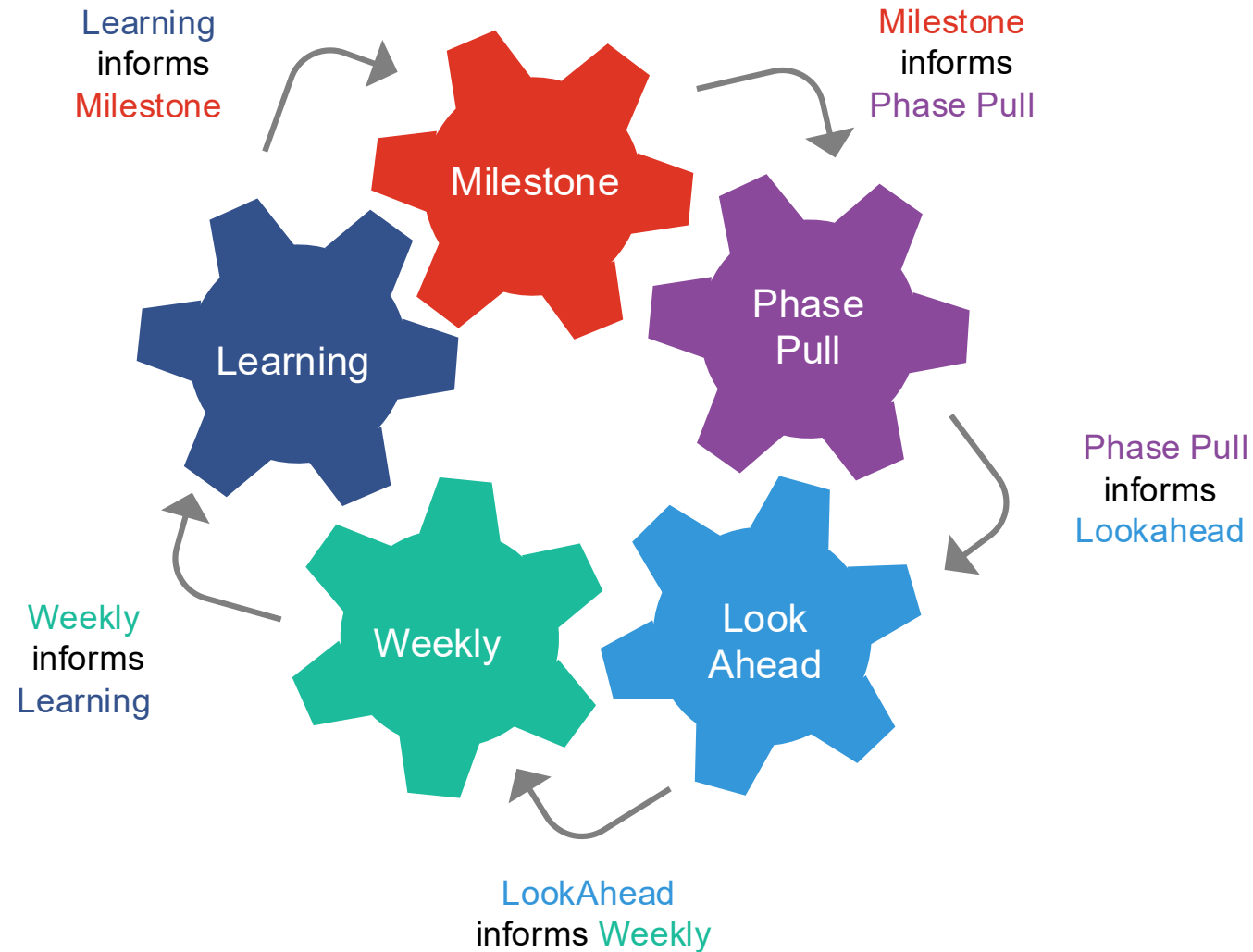


A system is a group of interacting or interrelated entities that form a unified whole to achieve a purpose.





System for Planning



Who Is The Last Planner®?

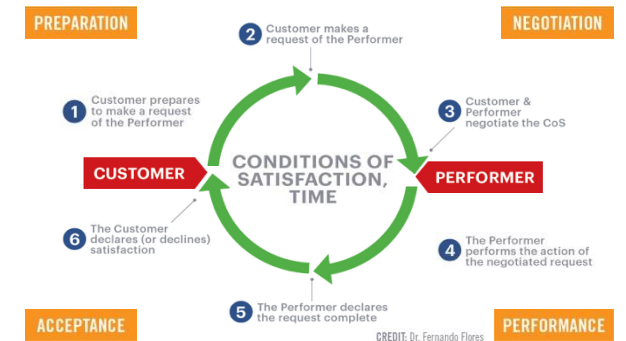
The ***Last Planner***® is the person closest to work with the authority to make decisions regarding the schedule and to make reliable commitments to complete the work of their discipline.

Last Planners®

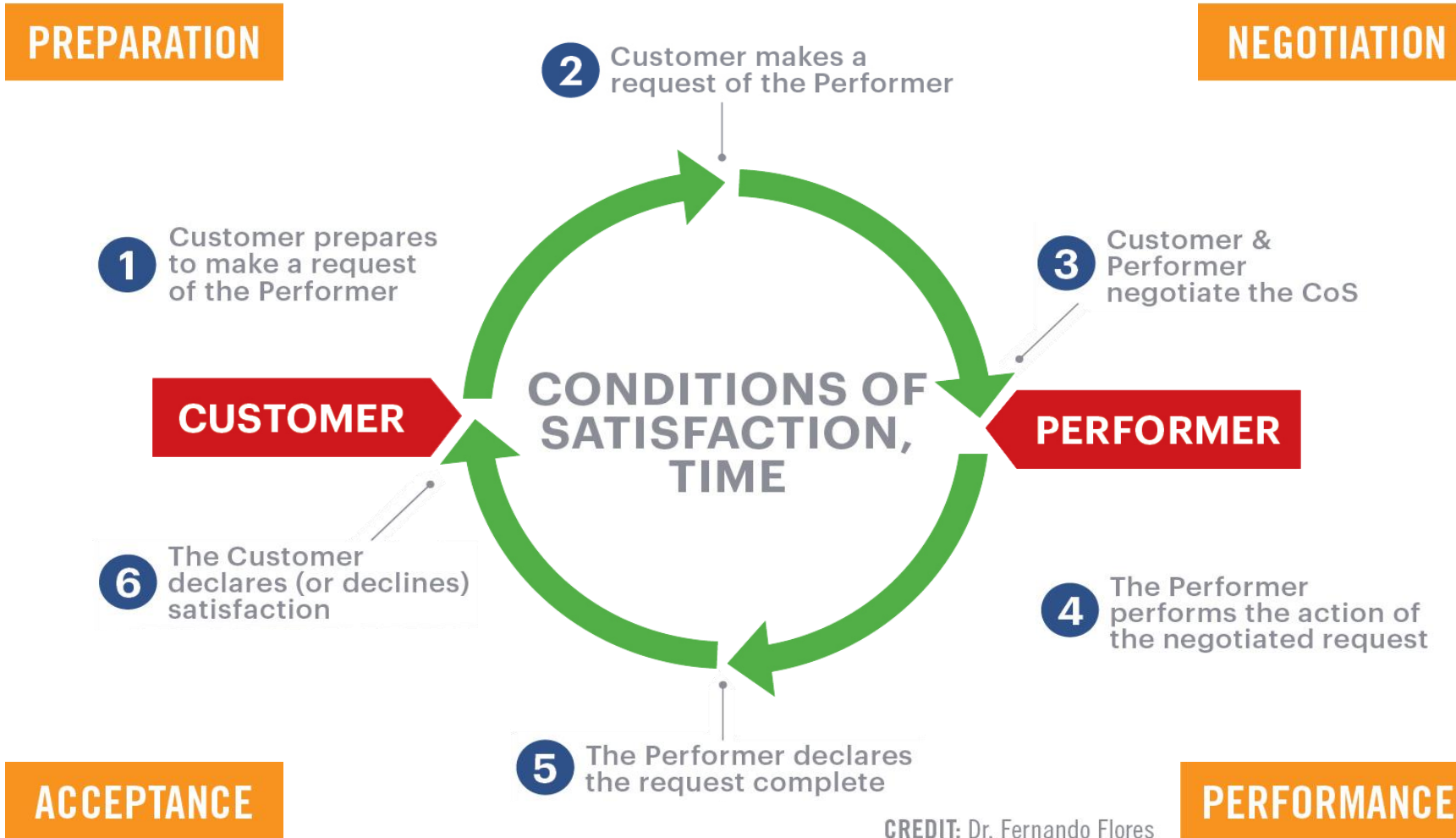


Elements Of A Promise

- **The Customer:** The person making the request.
- **The Performer:** The person fulfilling the request.
- **Negotiated Conditions of Satisfaction (CoS):**
 - Are part of the language act of making a promise.
 - Are developed by the people involved in the request and promise.
 - Are mutually agreed to, measurable statements, that help to define the success of the project.
 - Inform the decision-making process.
 - Include a time frame.



Basic Action Workflow Of A Promise



Who is doing
what by
when for
whom?

Reliable Promises

I can do it when...

- I have the ability to say “no”
- I am able to perform the work
 - Or I supervise the performers
- I estimate how long, hands-on, it will take
- I have the capacity & I’ll allocate it
- I am not having a private unspoken conversation in conflict with the promise
- I will be responsible

Commitment processes are conversation acts

Reliable Promising

Which of these are promises?

- I will do...
- Maybe I will...
- I'll try, we'll see what happens...
- Yes, I will do... if...
- I could probably do it
- No, I cannot do it
- Sure, I'll try to do...

& which of these are useful?

Reliable Promising

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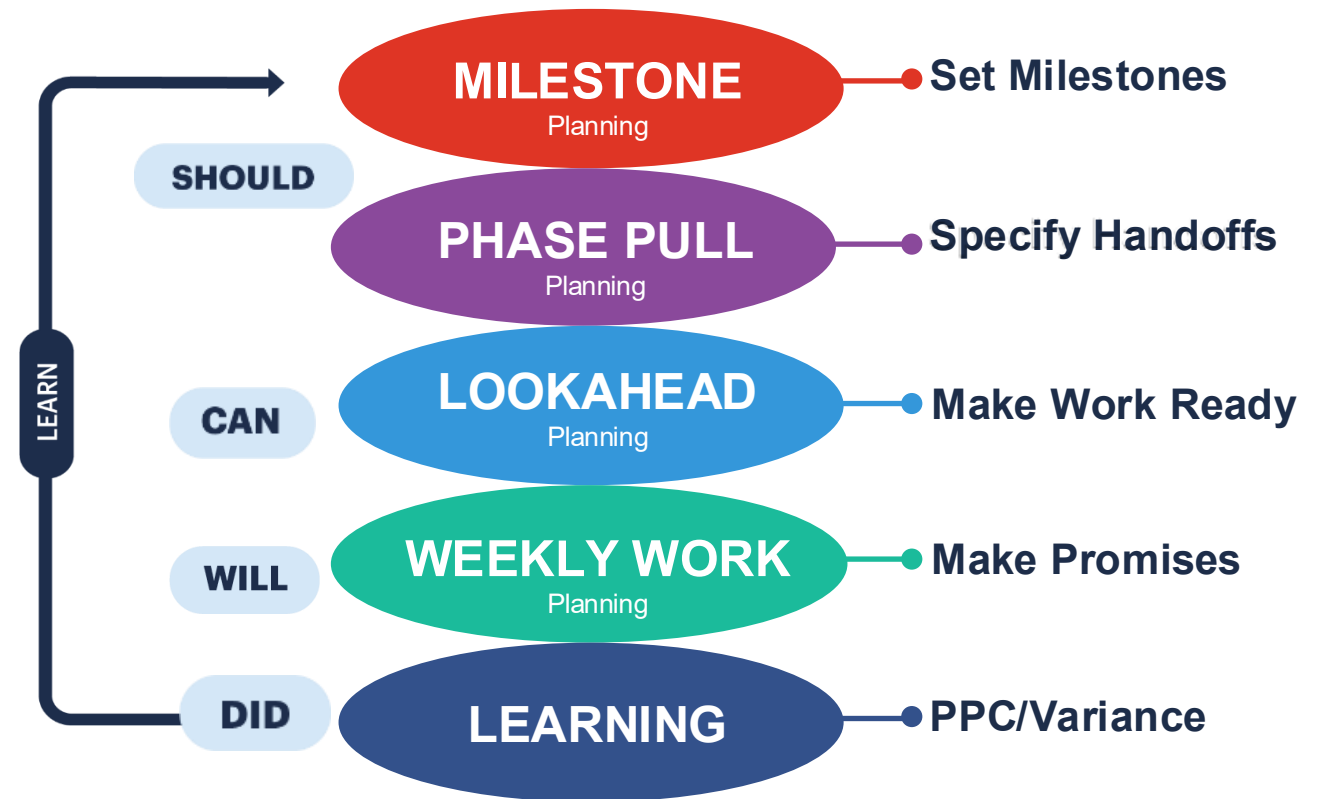
& which of these are useful?

5 Connected Conversations Of LPS

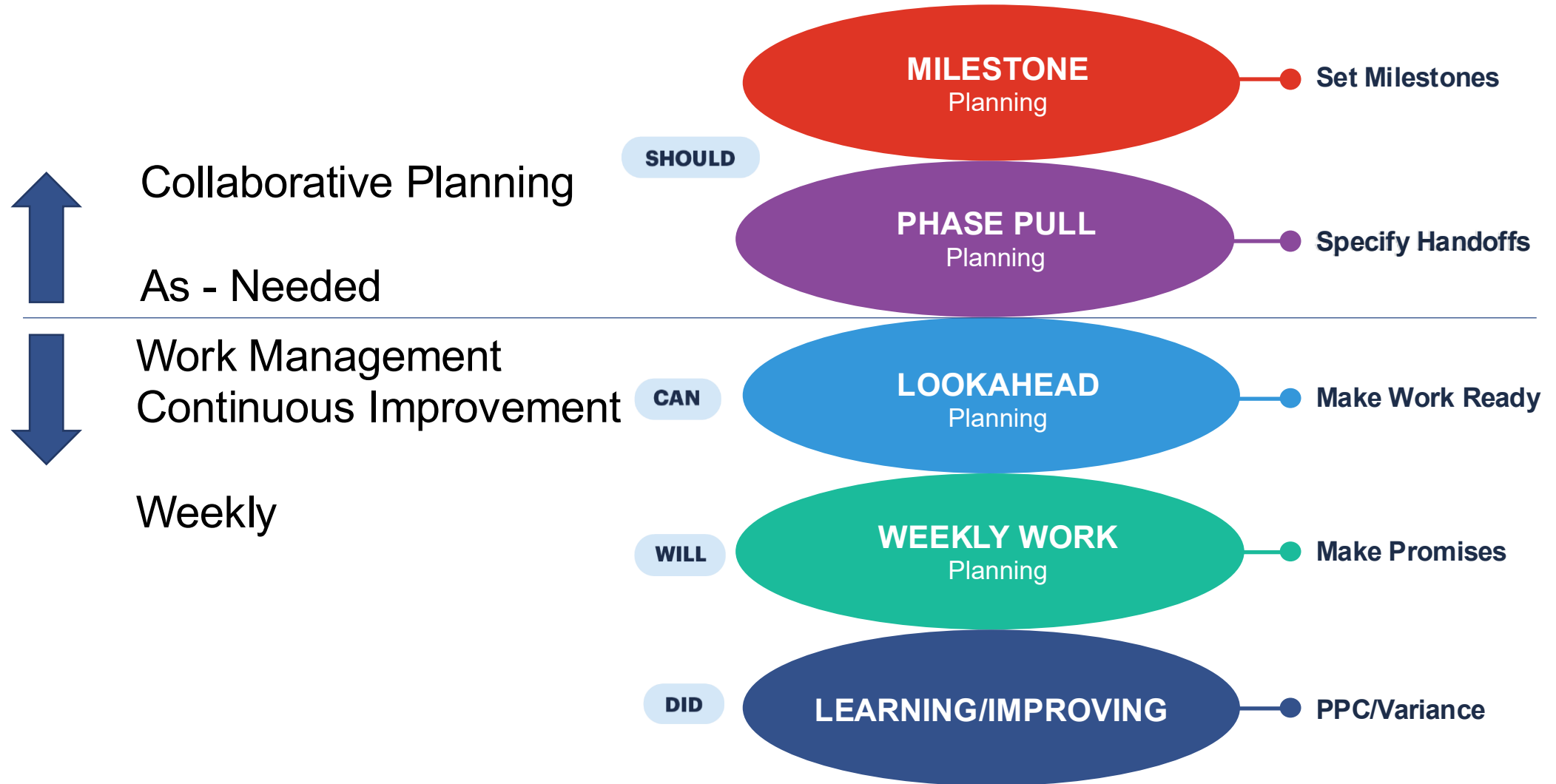
The LPS is a commitment-based system integrating 5 connected planning conversations:

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

5 Connected Conversations



Last Planner System Overview





The Project – LPS Begins with Scope

Tiny Home Construction: We will be using a *fictitious project* to practice application of each conversation in Last Planner System.



Imagination-O-Meter

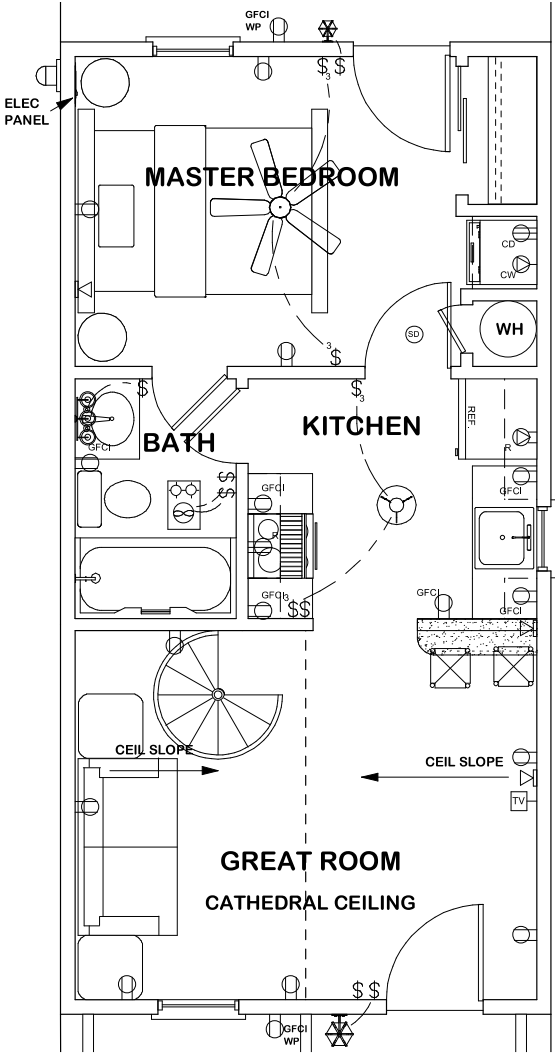


The Project – Tiny Home

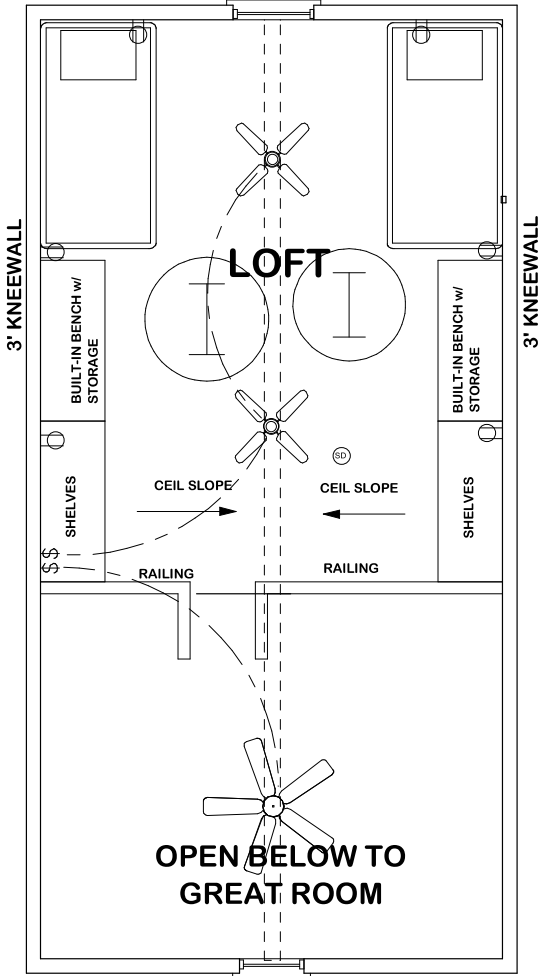


The Project – Tiny Home

First Floor



Loft





Home Specifications

- 1 bedroom and 1 bath, as well as a sleeping loft.
- 8'-0" ceilings on first floor and cathedral ceiling in the loft, rising from a 3' knee wall.
- The house is 15'-0" wide and 30'-0" deep (+6' rear deck and 4' front porch)
- Gable metal roof with a main roof pitch of 10:12 and a hip roof over porch with a pitch of 6:12.
- Vinyl or hardi plank siding.
- Plan comes with pier and beam foundation.
- **Square Footage:**
 - First Floor: 450
 - Loft: 270
 - **Total Heated Living: 720**
 - Porch: 60
 - Total Area Under Beam: 780
- Prefabricated steel spiral staircase.
- Dual zone split system heat pump HVAC with ductless cassette indoor units and pumped condensate drain.
- Kitchen & Bath Exhaust with through wall vents.
- Finishes:
 - Wood Plank Vinyl Flooring.
 - LED Lighting.
 - Energy Start & Low Consumption fixtures/appliances.
- Low-E Glazing.

Activity: Team Member Trade Assignments

Trade Assignments:

- 1) Concrete
 - 2) Site & Landscape
 - 3) Framing & Drywall
 - 4) Envelope
 - 5) M&P
 - 6) Electrical
 - 7) Interior Finishes
-
- LPS Facilitator
 - LPS Champion





Activity: Role Assignment

- Teammate introductions
- Decide on project roles to play
- Add selected role to your name tag

10 Min





Start LPS
Milestone
Planning

Complete
LPS
Milestone
Planning

Milestone Planning

The first conversation of LPS is *Milestone Planning*.

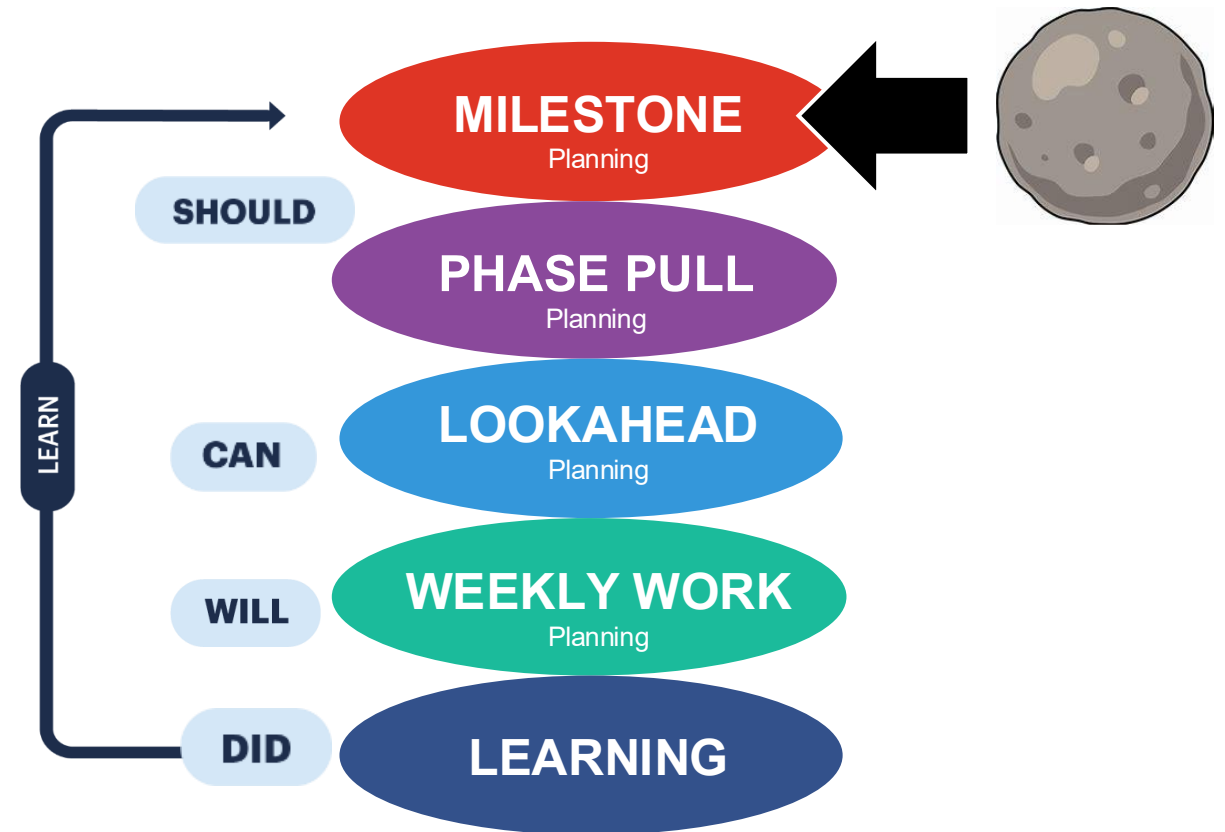


Milestone Planning

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

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

5 Connected Conversations





Milestone Definition

Project Milestones are a significant event which *releases* work in another major phase or trade.

Milestones should be *broken down by each trade* for their interim milestones to support the project requirements.





Milestone Examples

Mobilize
to Site

Structure
Ready for
Skin

Complete
Interior
Finishes

Complete
Structure

Define the Conditions of
Satisfaction for what is
complete to start the next work.

Milestone Planning: WHY

Teams that skip Milestone Planning/Alignment risk:

- Disconnect in the LPS Conversations.
- Misaligned prioritization of work.
- Delivering too large a batch for milestone completion versus just what is required to release the next phase/trade.
- Loss of visual management control of overall project road map.





Milestone Planning: WHEN

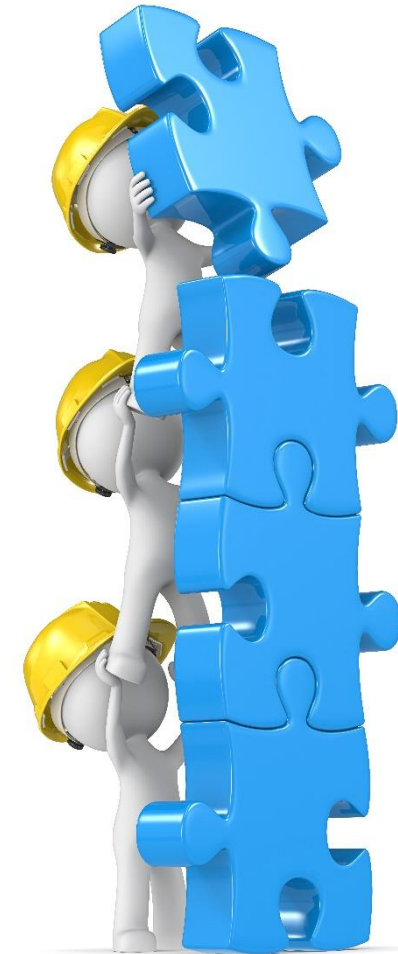
- As *early* in the project as possible.
- Can be done even *before we know the building design*.
- Should form the basis of continuing *onboarding as trades* engage in the project.
- Should set the *schedule for Phase Pull Planning* events.
- May be *conceptual* early on to provide a framework.



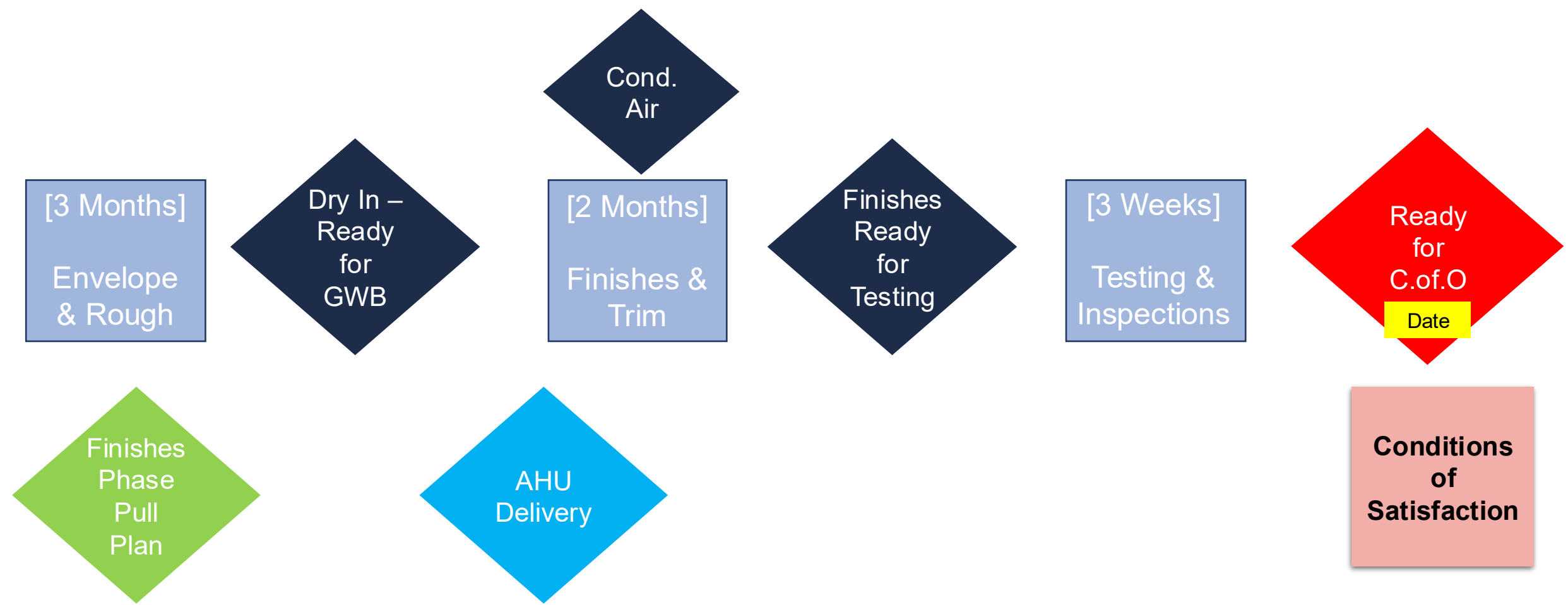


Milestone CoS: “Definition of Done”

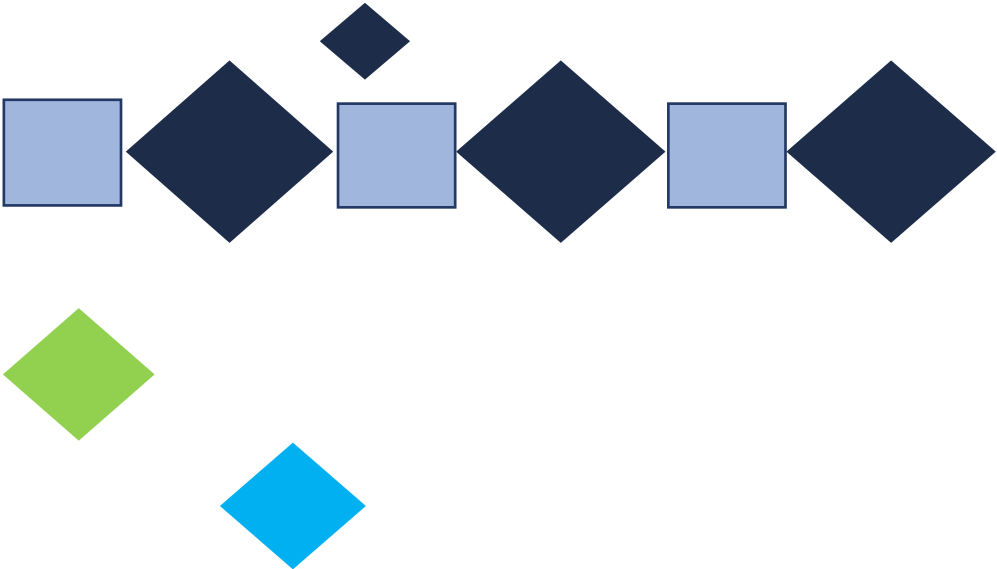
- Team aligns on a clear description of the *work included* in the milestone by each trade.
- What is *essential* to satisfy the pull of the released phase.
- *High level*, don't get bogged down in minute activities.



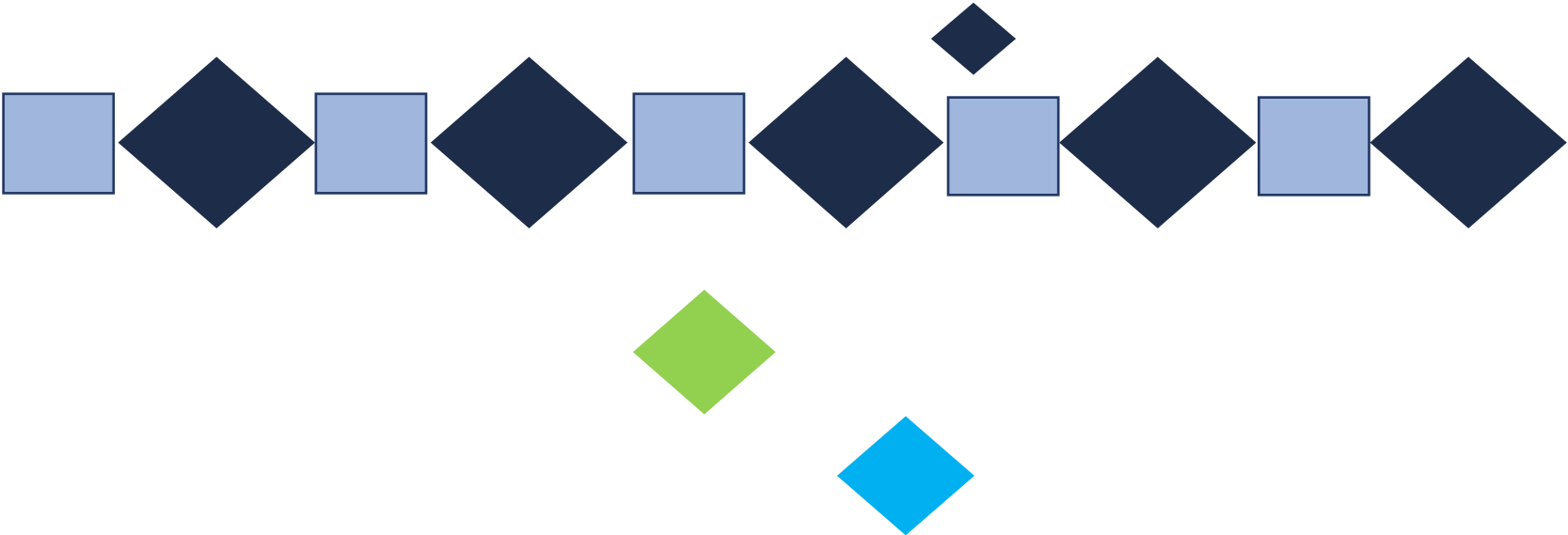
Creating the Milestone Plan



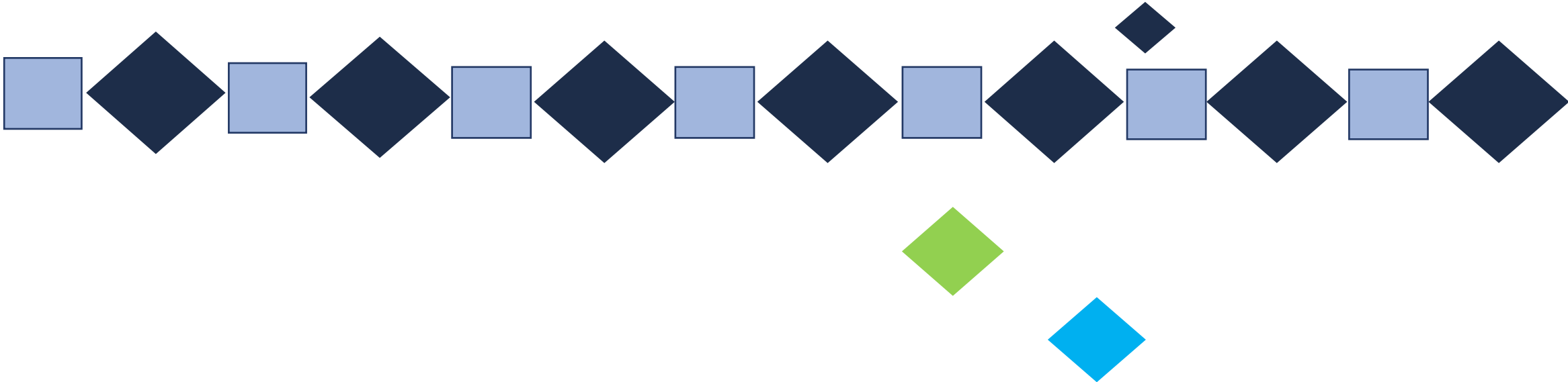
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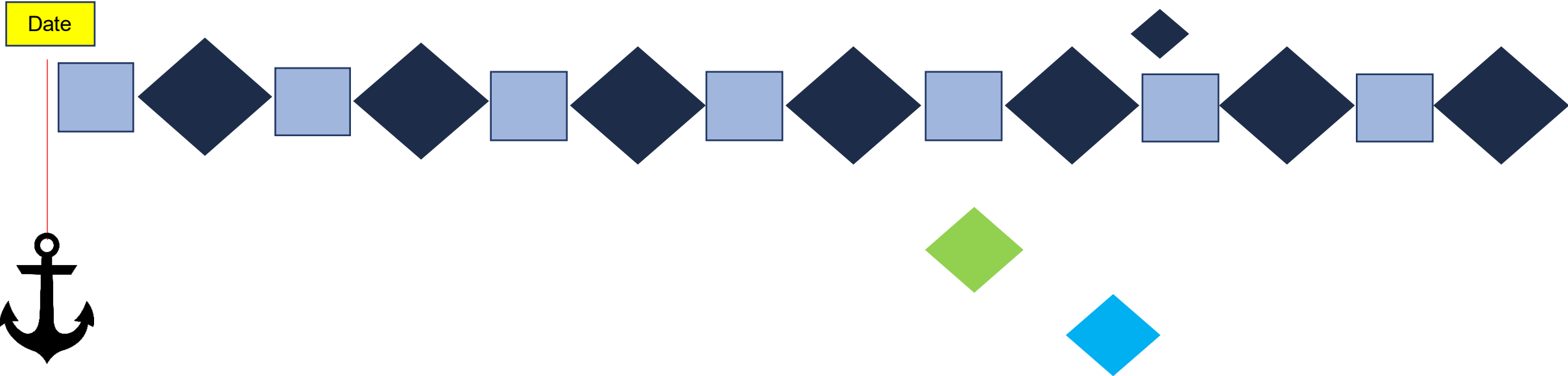
Creating the Milestone Plan



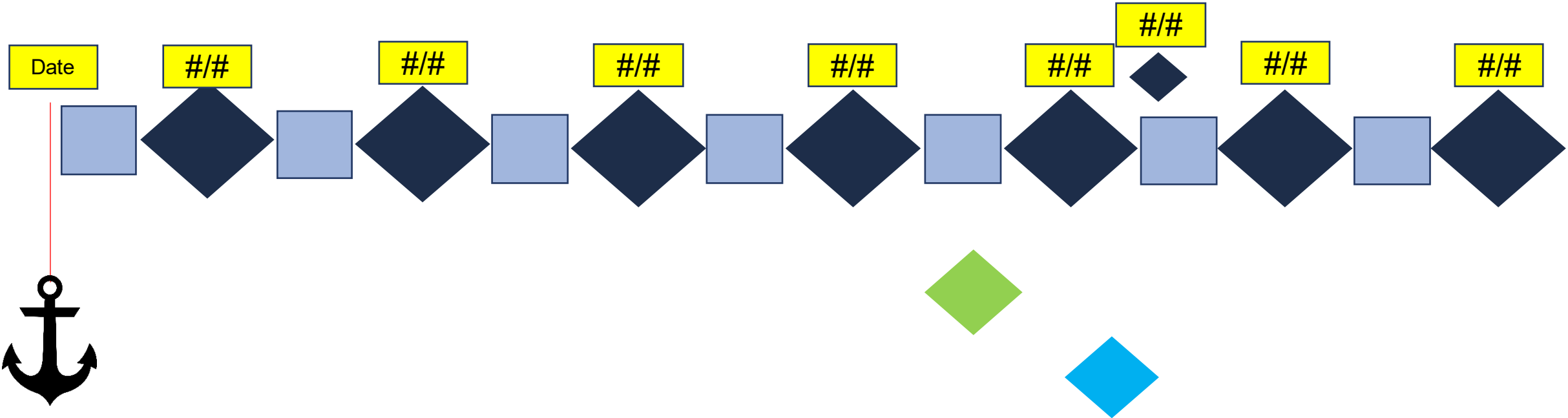
Creating the Milestone Plan



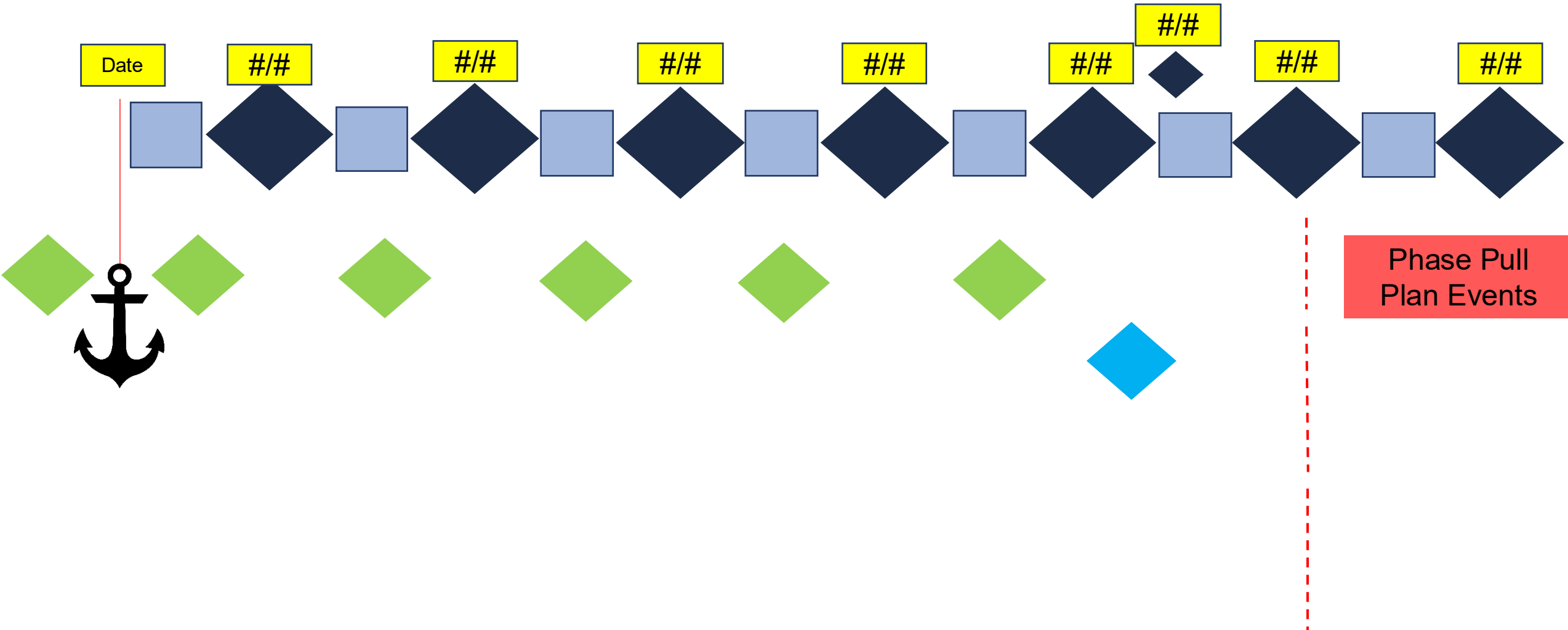
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Creating the Milestone Plan

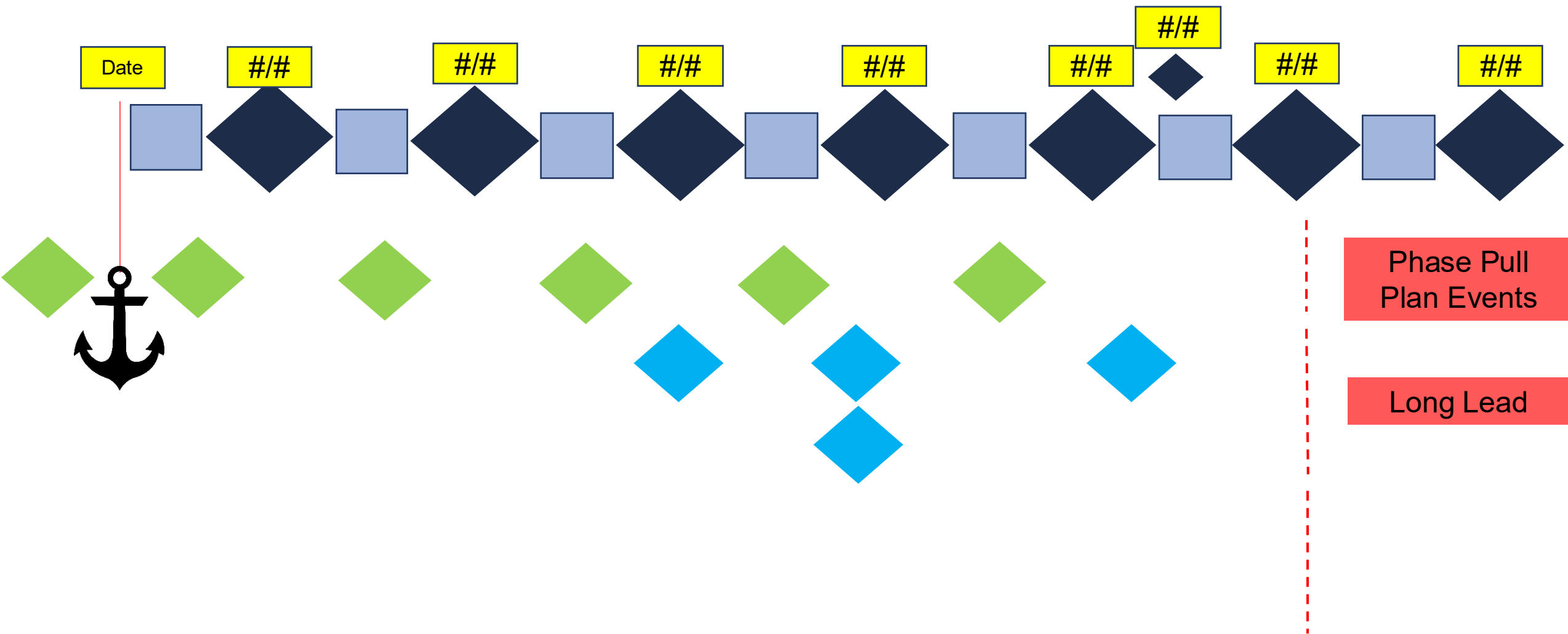


Creating the Milestone Plan



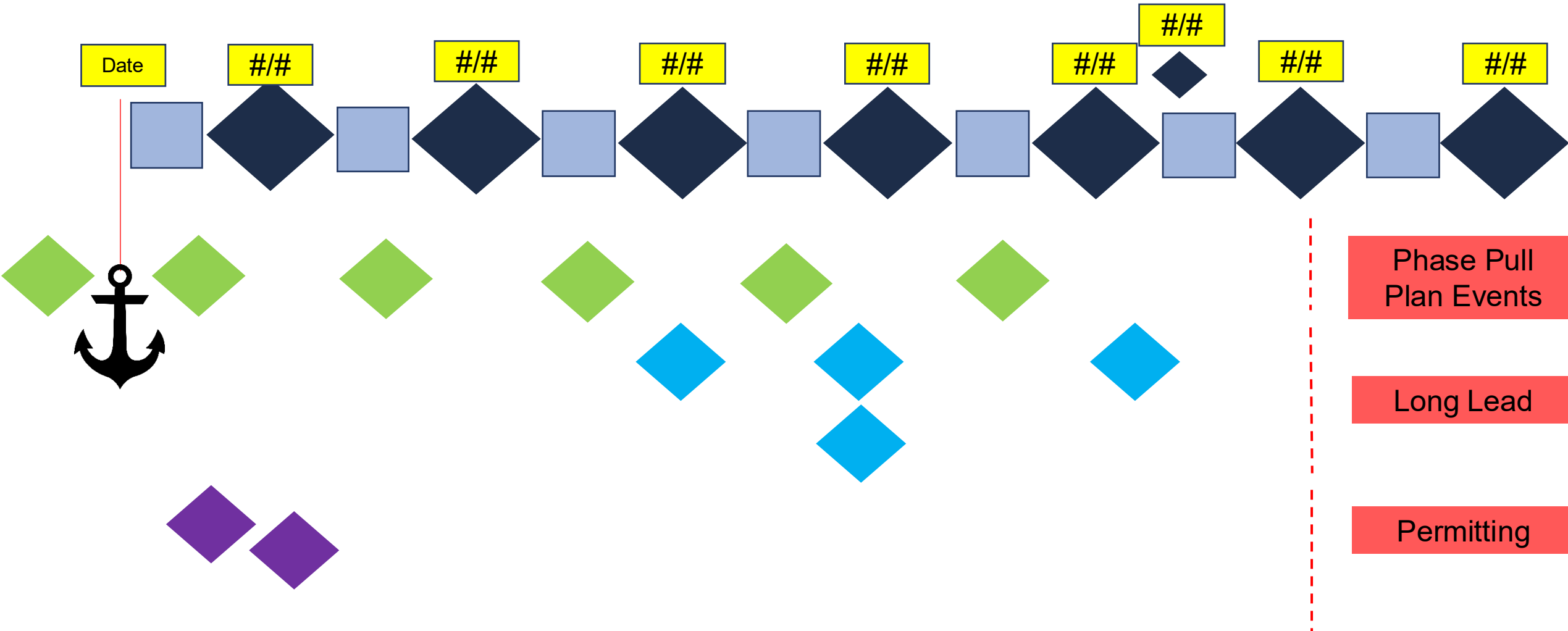


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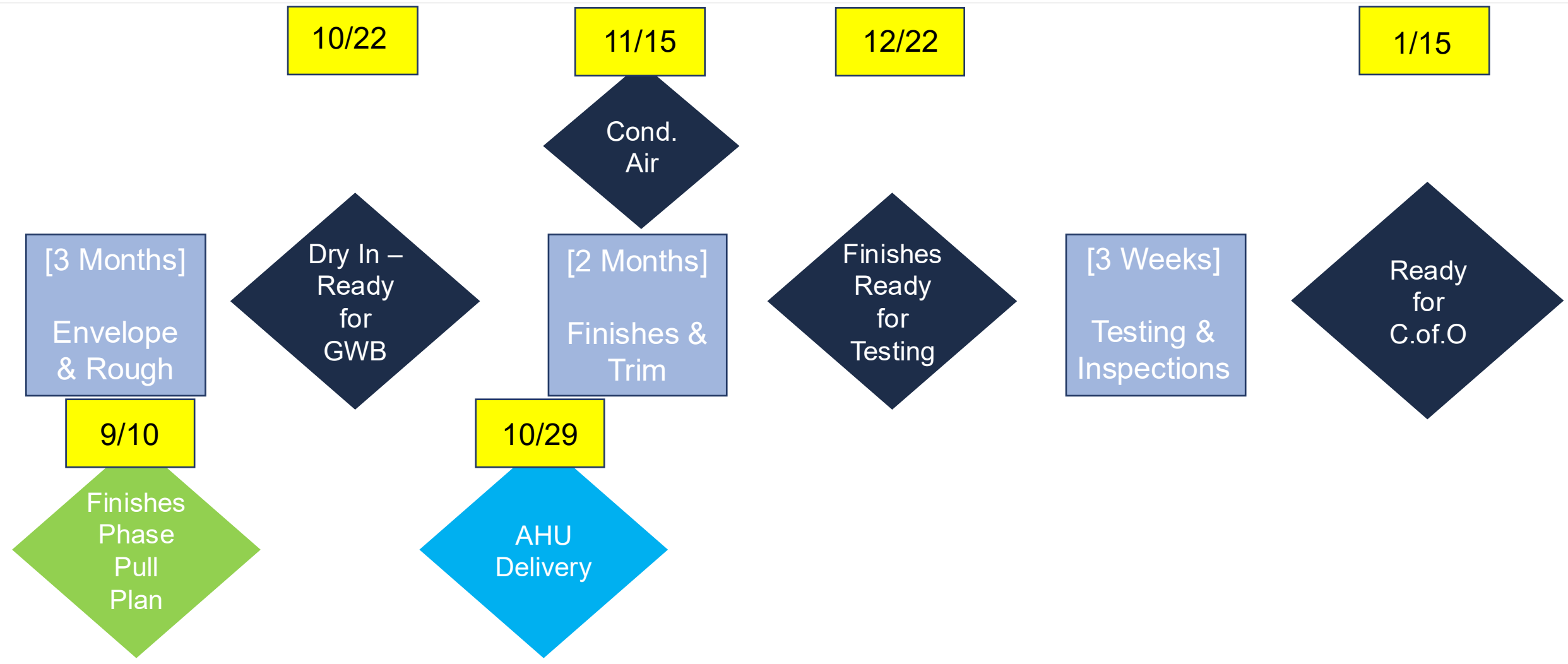




Creating the Milestone Plan

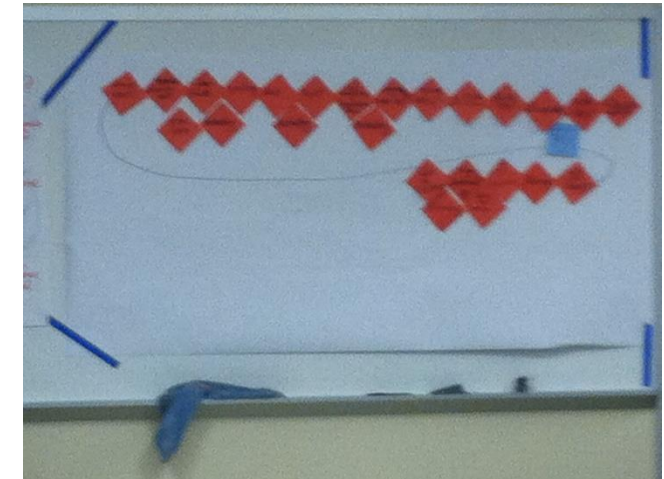
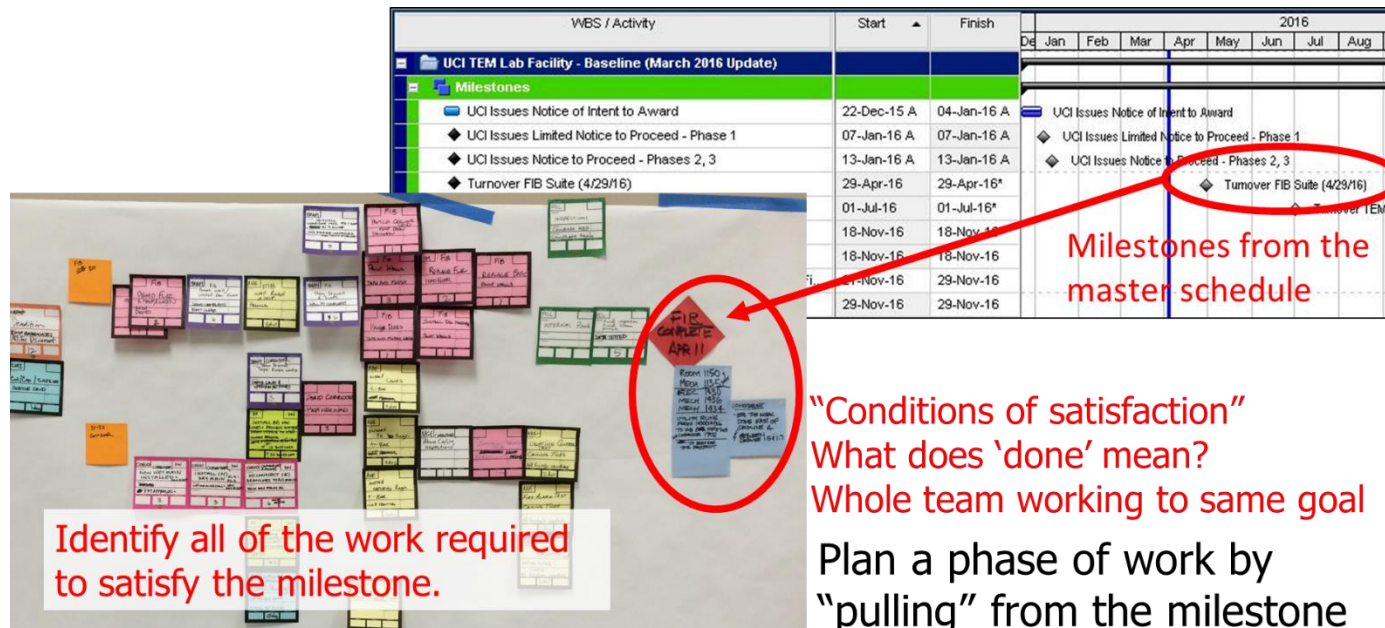


Creating the Milestone Plan

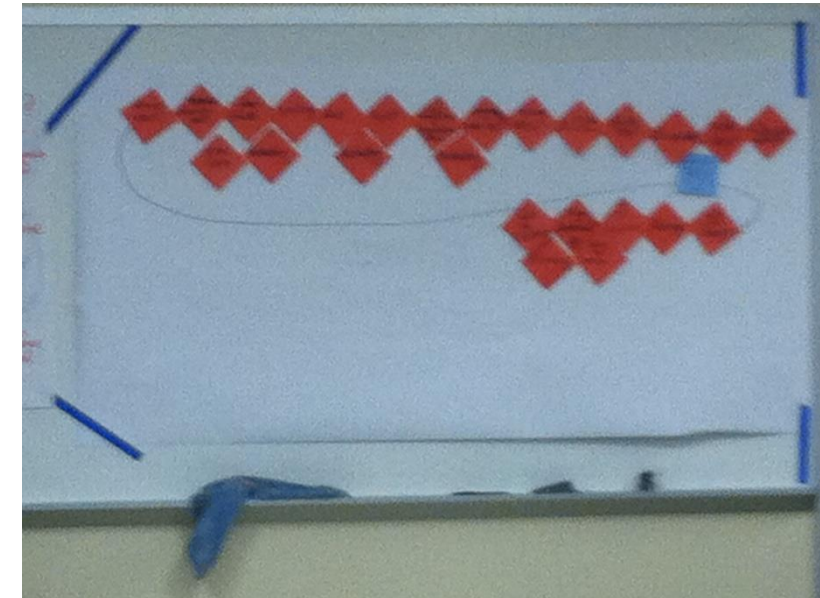




Milestone Planning In Action



More than one way to format





Activity: Tiny Home Project Milestone Plan

Activity Description:

- Use blank paper, post-its and sharpies
- Start with final milestone
- Create construction milestone structure and flow
- Estimate phase durations
- Arrive at the beginning: 1 Week from 'Permit in Hand'
- Populate Dates Forward

20 Minutes

Permit
in Hand

Ready
for
Owner
Move-in





Phase Pull Planning

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



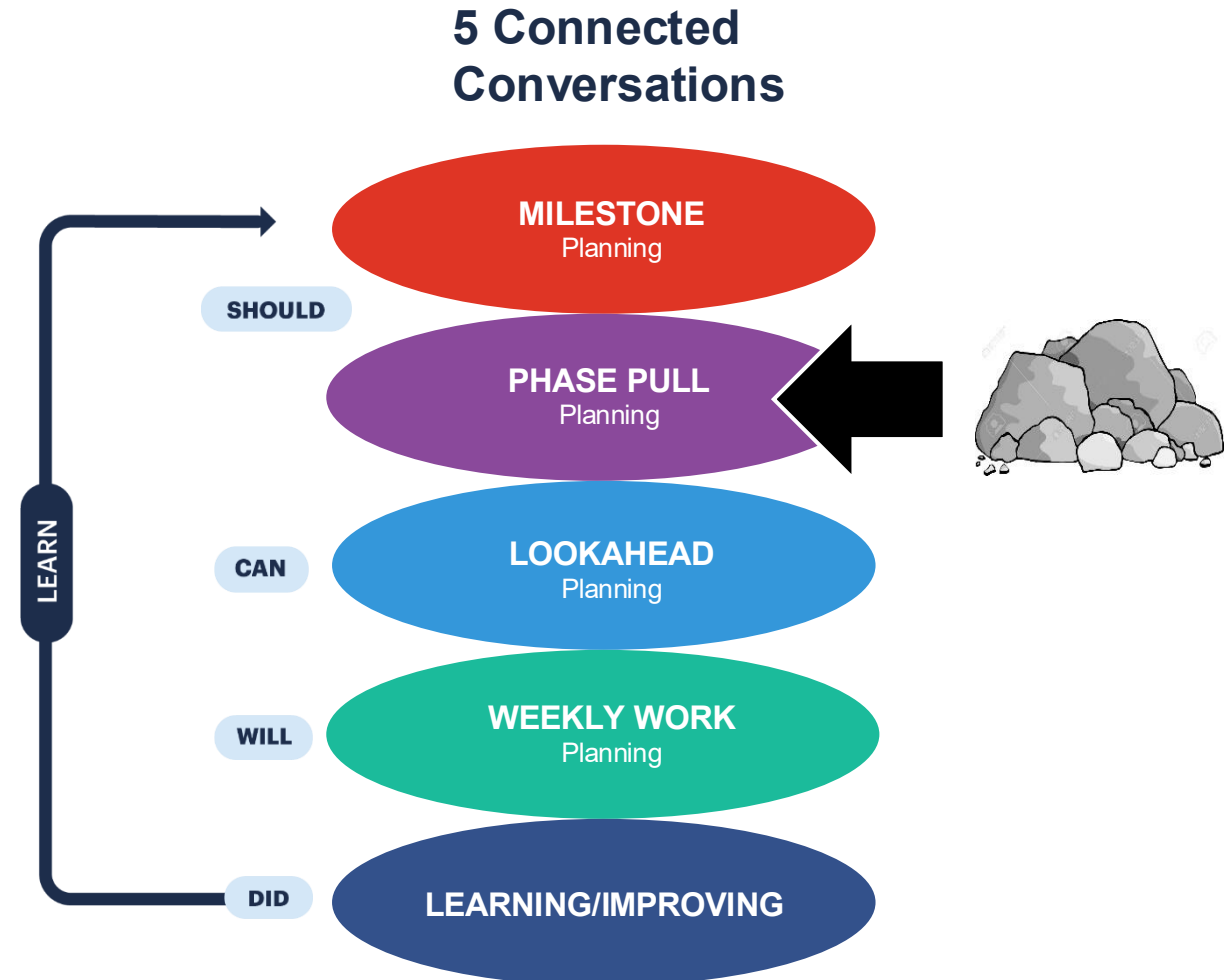
Phase Pull Planning

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.

Pull may validate or change the sequence in Milestone Planning output.

Milestone planning is a pre-requisite.

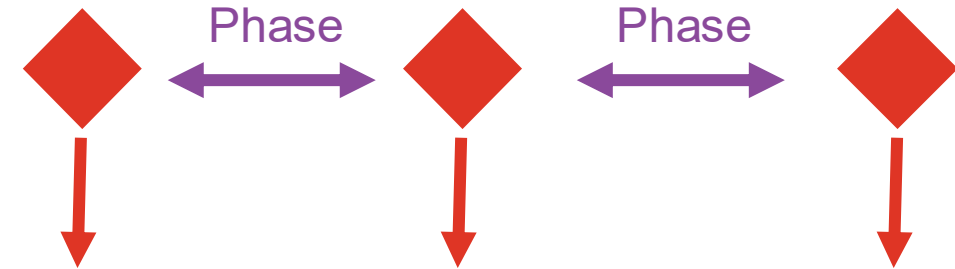


Phase Definition

Phase:

A period of the project, where a ***specific group of activities*** is scheduled to be accomplished.

A phase can be either a time period or a group of activities leading to the ***accomplishment of a defined goal/milestone.***



Courtesy of: Brasfield & Gorrie



Courtesy of: PCL Construction

Phase of the work scaled per the milestone size to be an appropriate batch size

Informed by the **Milestone Plan**

Work out the structure and durations

After – add dates and transfer to the **Look Ahead Plan**

Push vs. Pull

Push:

- Advancing work based on central schedule.
- Releasing materials, information, or directives possibly according to a plan, but irrespective of whether the downstream process is ready to process them.

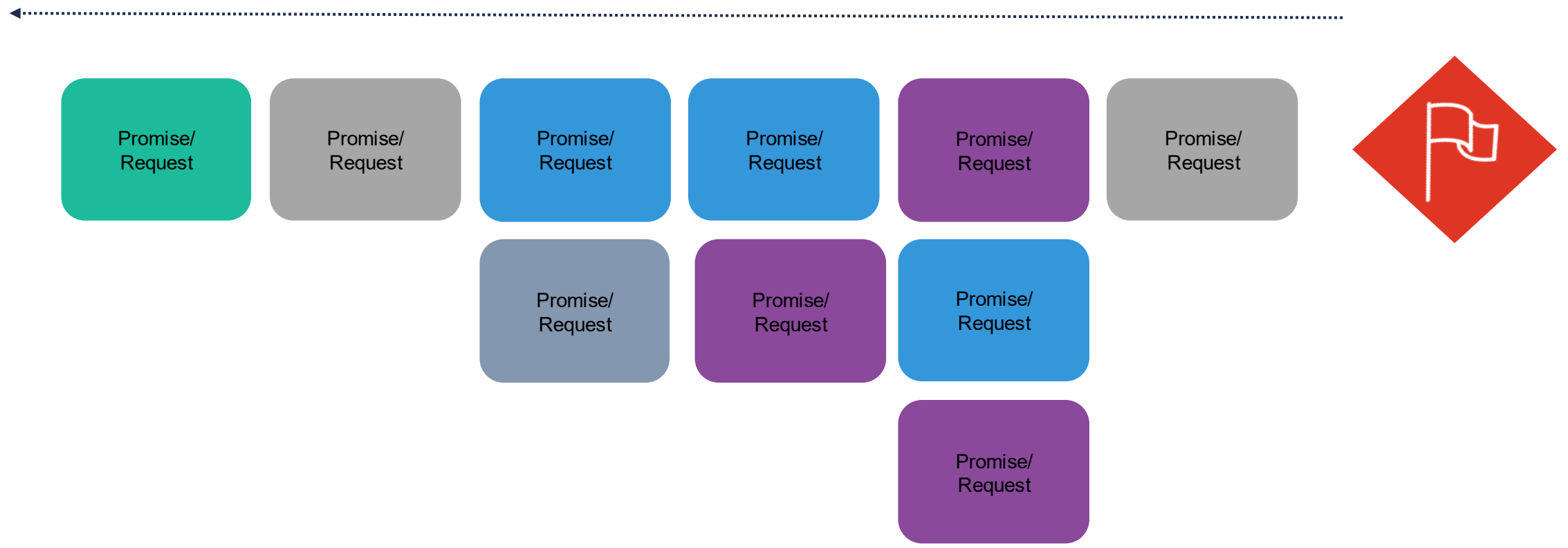
Pull:

- Advancing work when the next in line customer is ready.
- A “Request” from the customer signals that the work is needed and is “pulled” from the performer.



Pull: Creating Flow

Develop the Plan



Execute the Work

Phase Pull Planning: “Should”

Phase Pull is performed to *plan the work for each milestone*.

- Examples: Structure Ready for Skin, Dry-In Ready for Drywall

The Phase Pull Plan is a high-level view of what the team “*should*” *be able to do*, breaking  into .

Avoid *excessive detail* to minimize planning rework.



Courtesy of: JE Dunn



Phase Pull Planning: WHY Collaborate

- Tap into the knowhow of the people that will do the work.
- Ensure the Last Planners can achieve the original promise date of the milestone.
- Better understand each others' needs between handoffs.
- Align to a plan as a team - 'our plan' vs 'their plan'.
- When work is made to flow, everyone benefits.



Courtesy of: PCL Construction

Phase Pull Planning: Preparation

Identify Milestone and ‘Conditions of Satisfaction’

- Identify Milestone the team will pull from.
- Determine work areas and batch sizes.
- Phases should be no more than a 2-3 month batch size.
- Break longer duration phases into interim milestones.
- “Conditions of Satisfaction” (CoS): Create a definition of Done for the Milestone and share it with the whole team.
- Align on the flow of work direction for all trades.



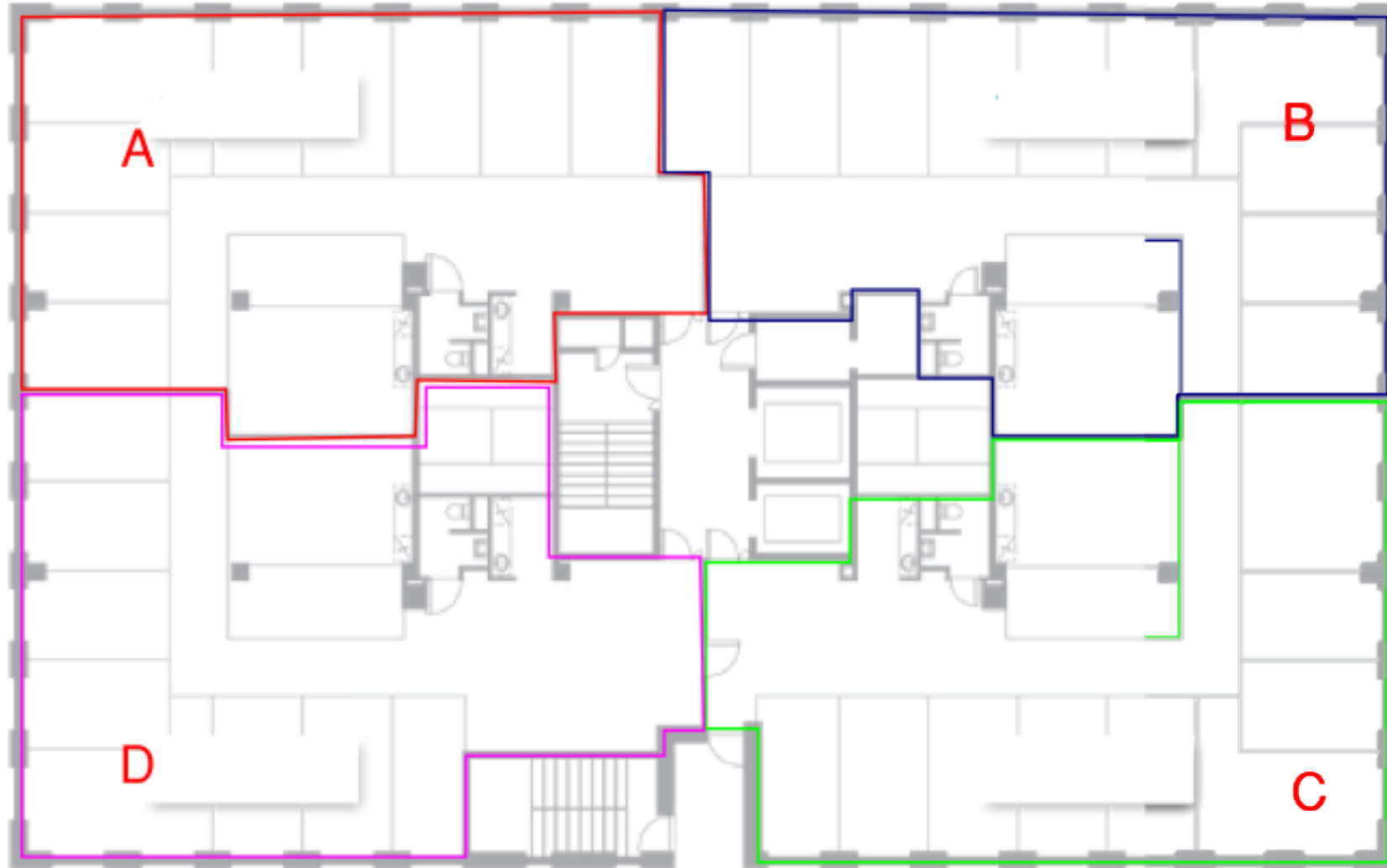


Example: Work Area/Batch Plan

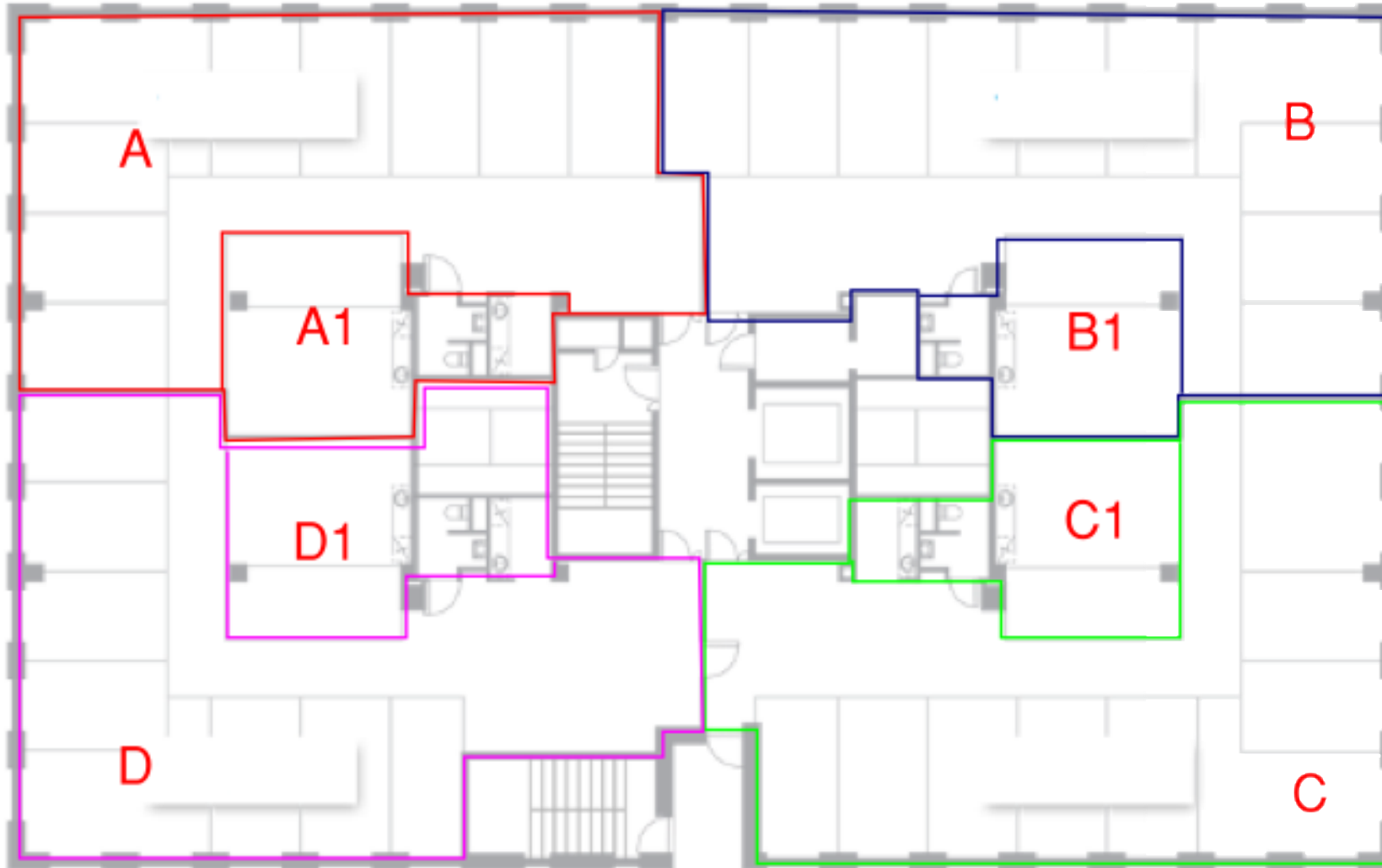




Example: Work Area/Batch Plan



Example: Work Area/Batch Plan





Phase Pull Planning: HOW

Last Planners Create Tags.

- Create a legend of color tags by trade.
- Include location/area to create flow of work.
- Breakdown duration estimates by area.
- Break up the work that is longer than ~5-10 days.
- Understand what you need from other trades to release your work.



Courtesy of: The ReAlignment Group



Phase Pull Planning: Example Tag

Name of person making the commitment



Name	# People	# Days
------	----------	--------

Duration of the work in days



of People for the work



Description of the activity



MY PROMISE / ACTIVITY

- What I will Deliver
 - Be specific
 - Small batch

Work Zone / Area

Work zone or area



- Format tag to best fit your team needs
- Add more information as valued
- Color code by trade or discipline

MY REQUEST / TRIGGER

- What Releases my Work?
 - Be specific

Description of the predecessor activity or work that releases the start of your activity





Phase Pull Example

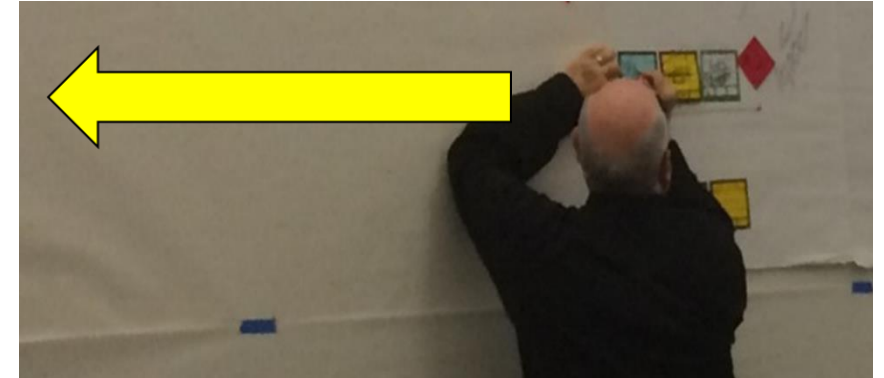




Phase Pull Planning: HOW

Create the Pull:

- Place the Milestone tag at the right end of the paper.
- Work backwards from the phase completion milestone.
- Begin with the last activity needed to complete the milestone and work backwards.
- Last Planners placing pull tags with 'Requests' must ask the other trade to meet the need by placing the corresponding tag.
- Gradually the team builds a network of commitments that satisfy each step in the process.





Phase Pull Planning: HOW – “Should”

Step1: Define “Done” – the CoS for completion

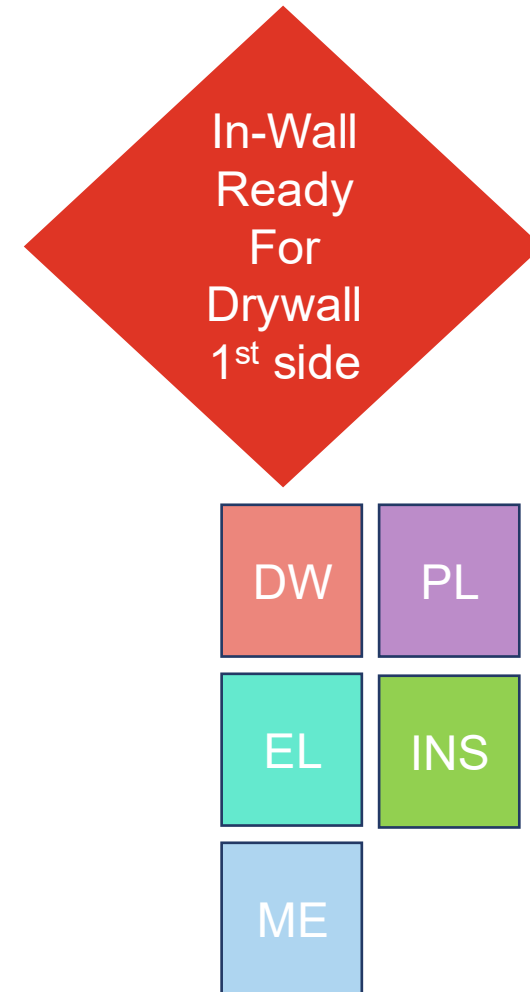
In-Wall
Ready For
Drywall, 1st
Side
Area A1

DEFINITION OF DONE

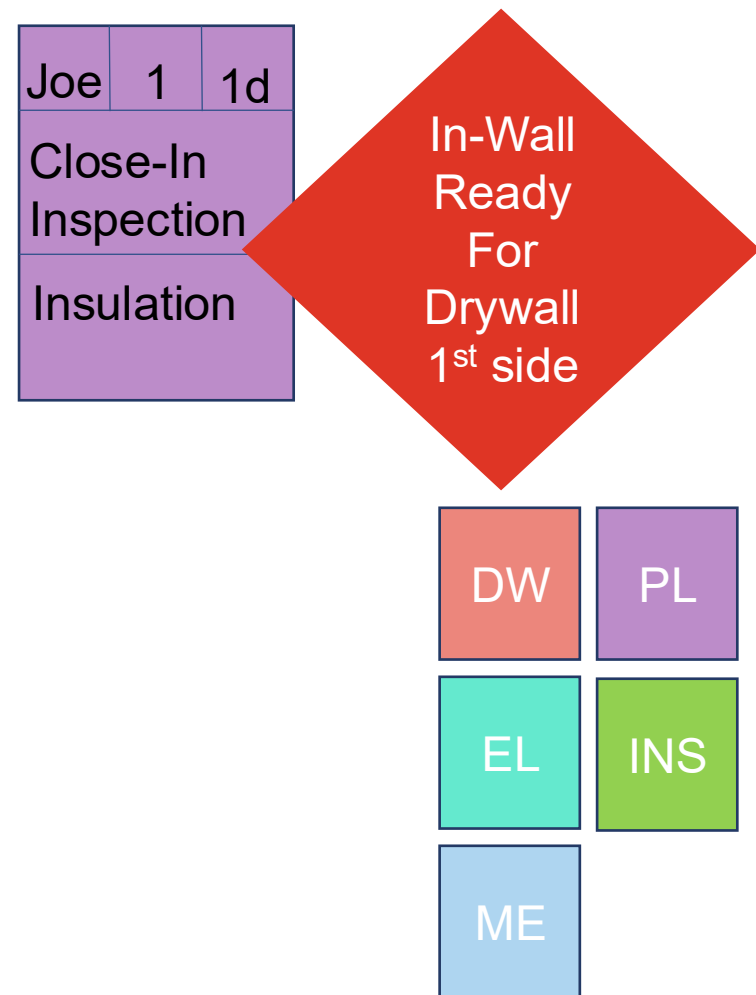
- Floor Leveling
- Layout
- Priority Wall Framing
- Overhead M/E/P
- In-Wall EGP
- Blocking
- Low Voltage Pathways
- Plumbing Tests
- Insulation
-
-



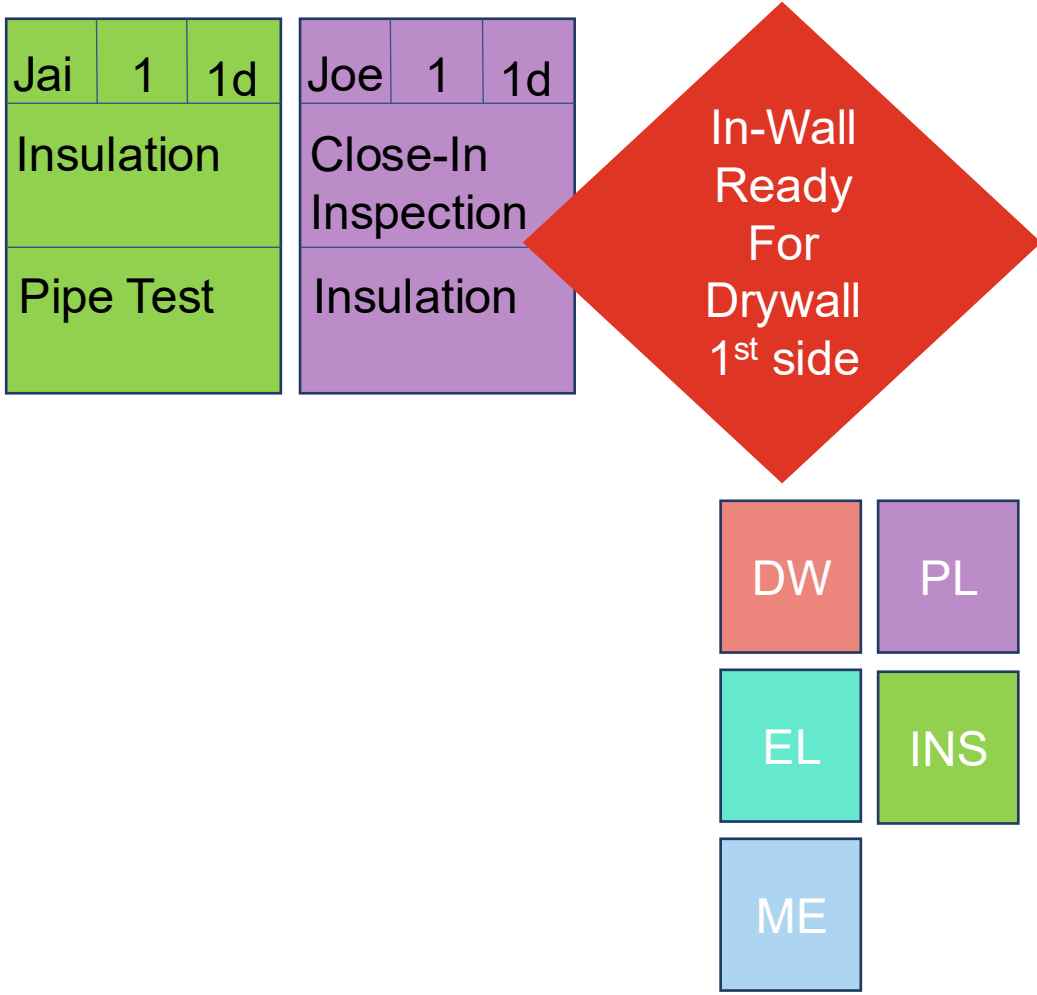
Phase Pull Planning: HOW – “Should”



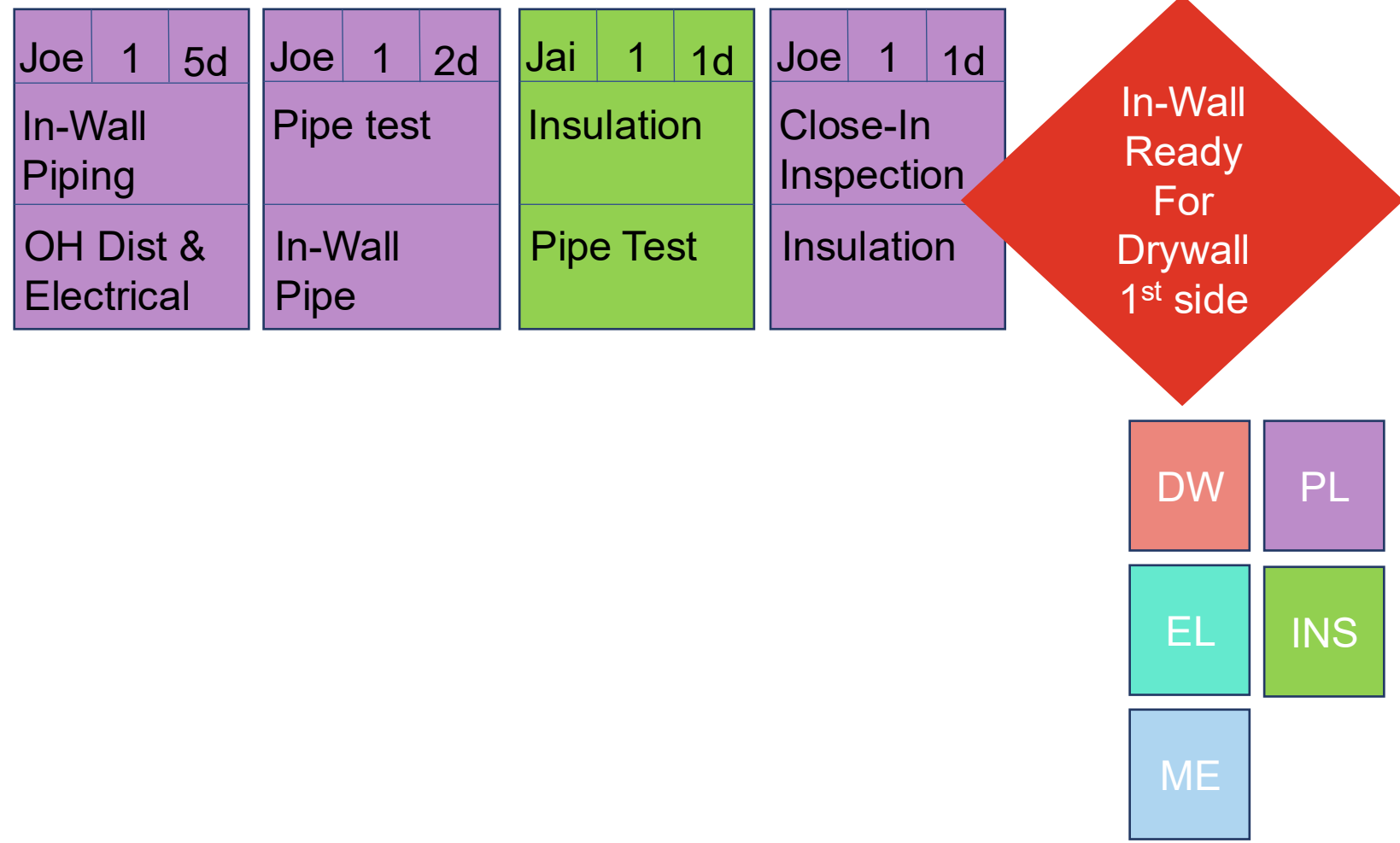
Phase Pull Planning: HOW – “Should”



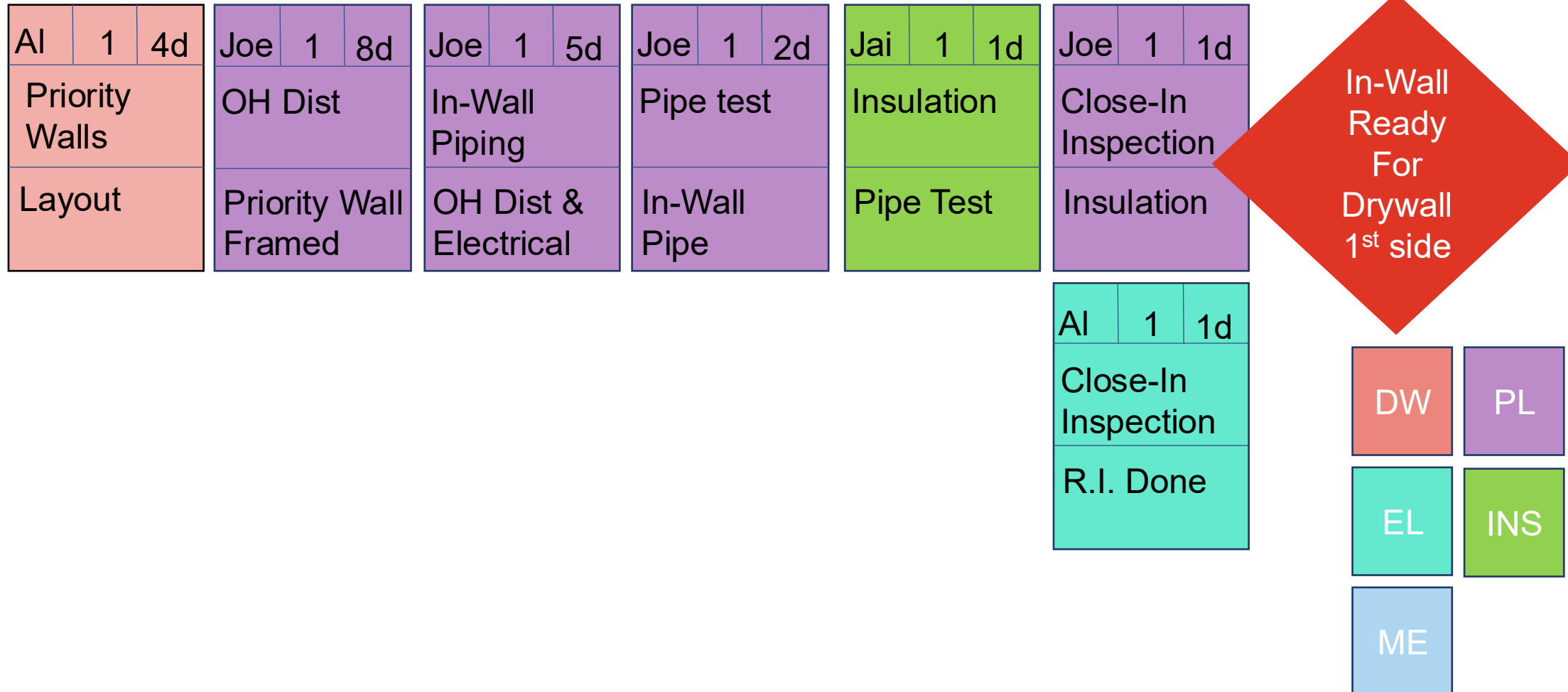
Phase Pull Planning: HOW – “Should”



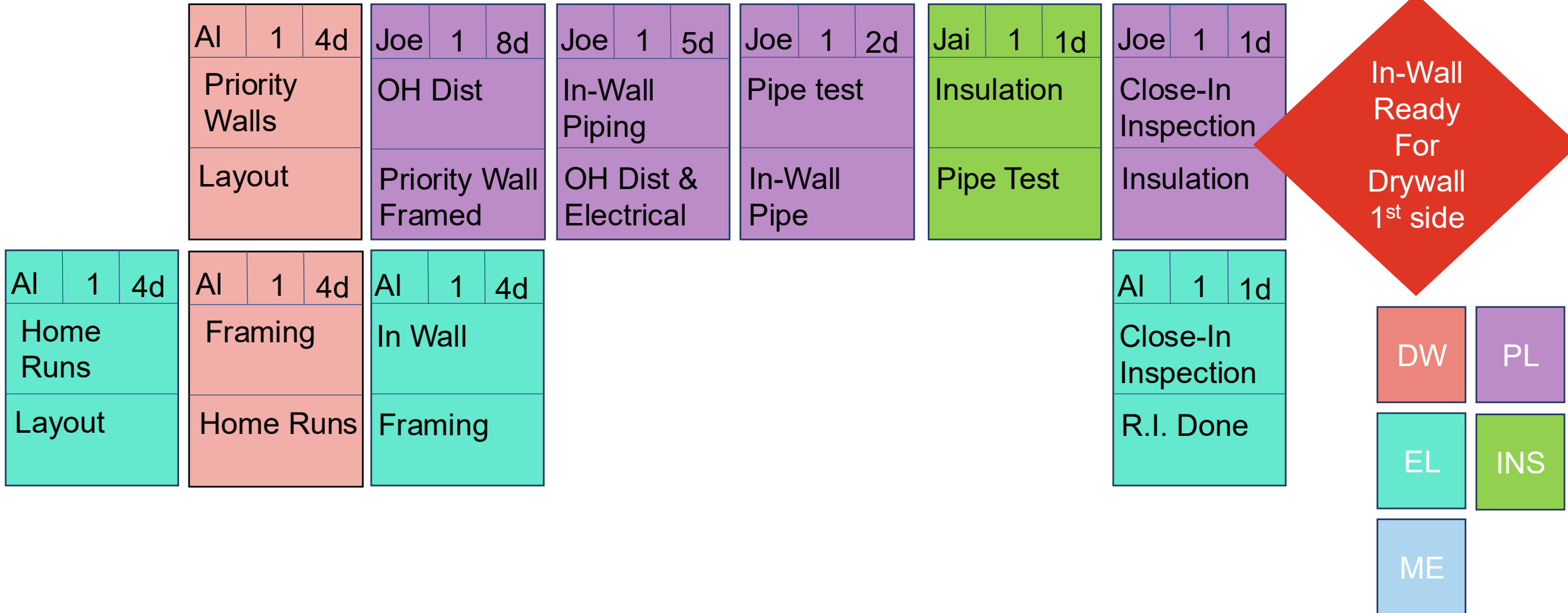
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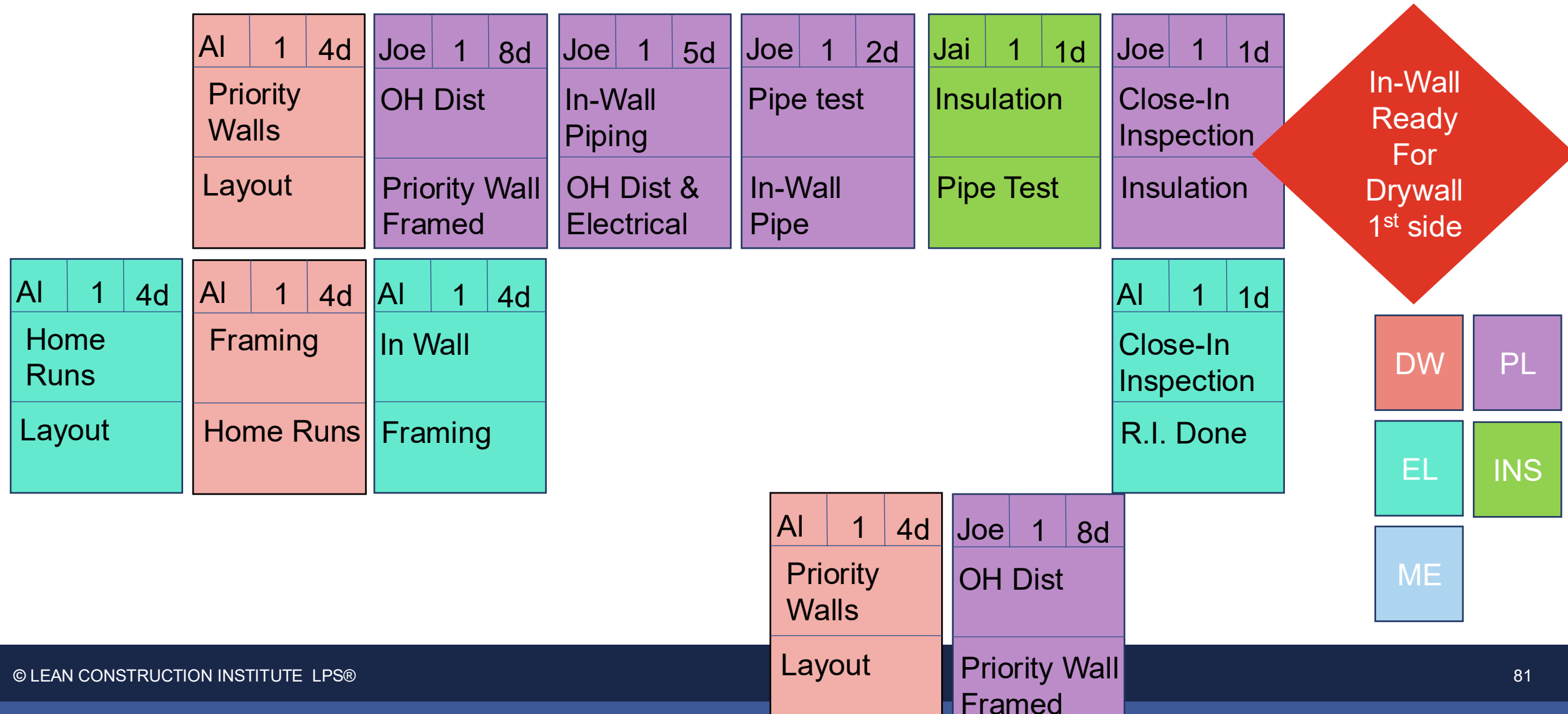
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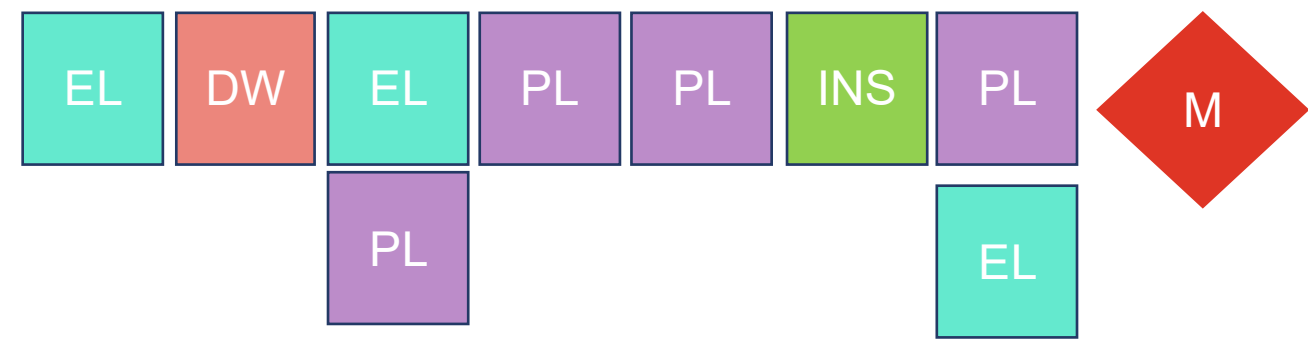
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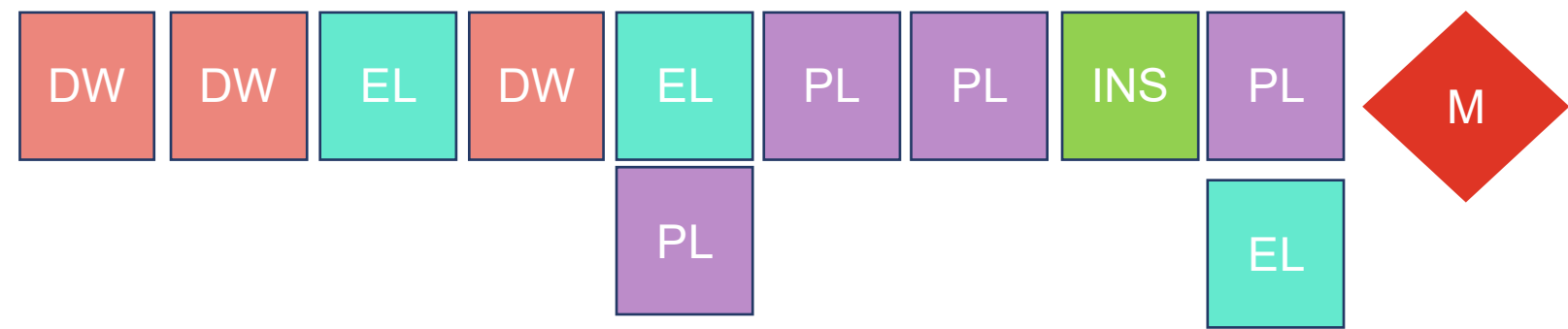
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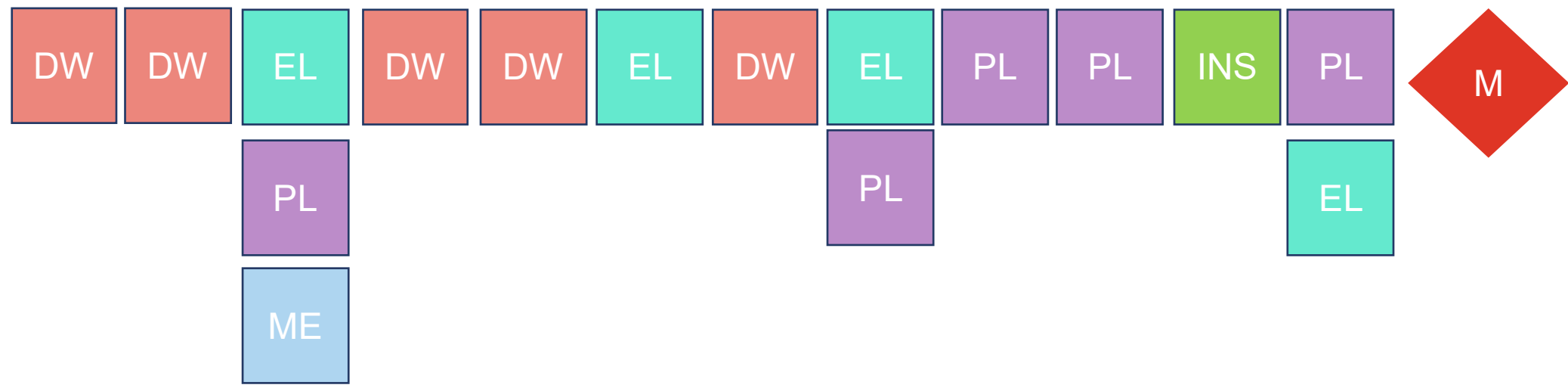
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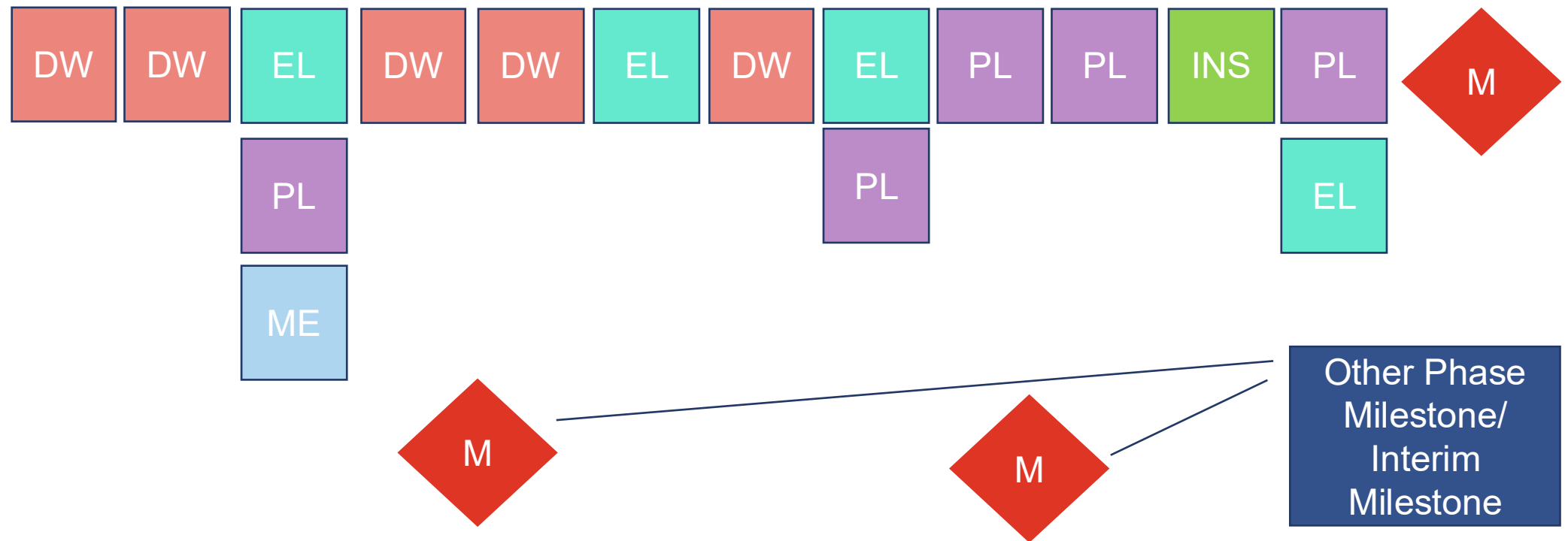
Phase Pull Planning: HOW – “Should”



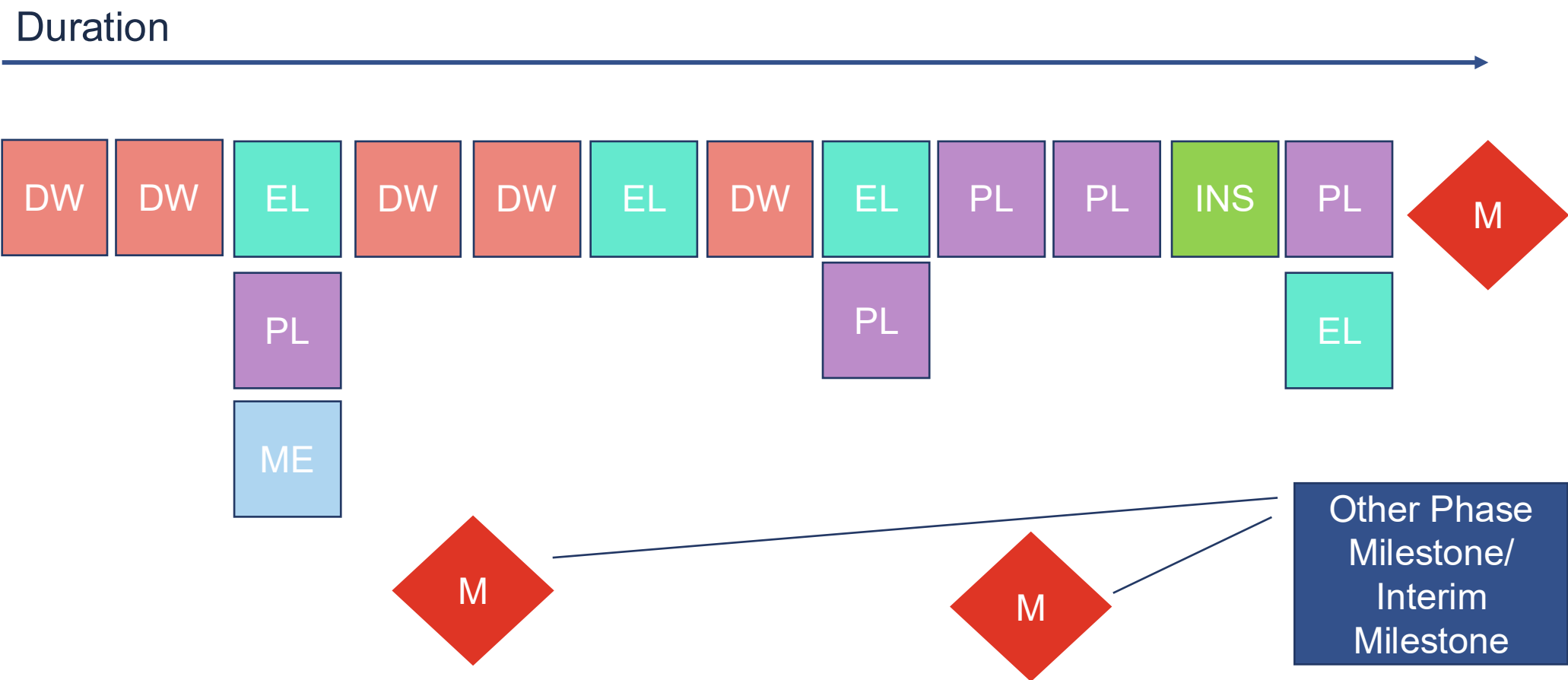
Phase Pull Planning: HOW – “Should”



Phase Pull Planning: HOW – “Should”



Phase Pull Planning: HOW – “Should”



Phase Pull Planning: Agenda

Step 1 - Identify milestones and define “conditions of satisfaction”

Step 2 - Last planners break down their work into tasks

Step 3 - Pull from the milestone backwards to build a network of commitments

Step 4 - Forward pass, check and adjust

Step 5 - Optimize the whole

Step 6 - Record the plan

Phase Pull Planning: HOW Wrap-up

Forward Pass Check:

- When most of the tasks are on the board, do a *forward pass* through the network.
- The group actively listens/talks through the sequence.
- Make sure all the needed information is on the tags.

Validate Phase Duration:

- Count days on the longest path(s).
- If the duration exceeds requirement, the Phase Pull Plan is incomplete.

Record the Plan (options):

- Photograph the results and share with the team.
- Update to P6/Master Schedule.
- Implement digital LPS tools.
- Keep a living Phase Pull Plan in the planning area.



Lunch 12:00 – 12:45





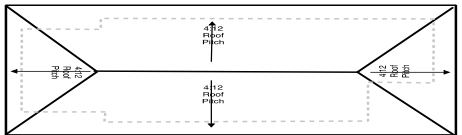
Activity: Tiny Home Phase Pull Plan

- **Preparation – 15 Min**
 - Select Milestone
 - Define CoS
 - Create Area/Batch & Flow Plan
- **Trade Preparation – 10 Min**
 - Activities & Duration Estimates
- **Create Phase Pull Plan – 20 Min**
 - Pull Activities
 - Validate Plan

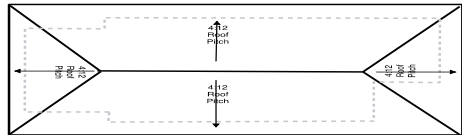
60 Minutes



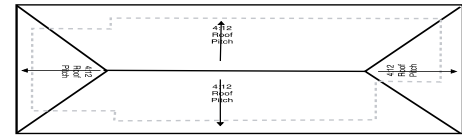
Tiny Home Batch & Flow



105



103

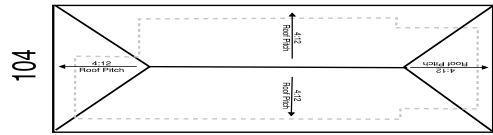


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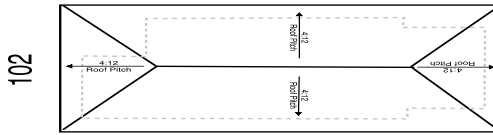
Tiny House Street West



106

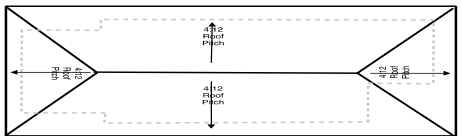


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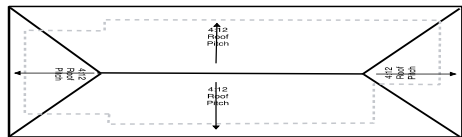


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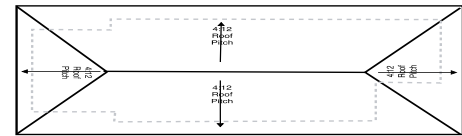
Why Batch Size Matters



105

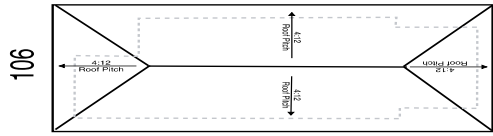


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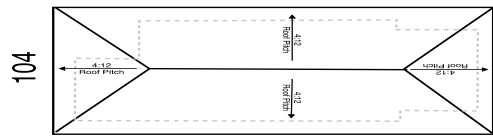


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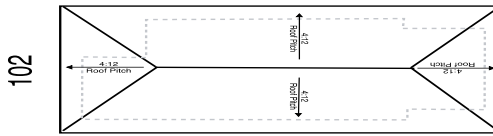
Tiny House Street West



106

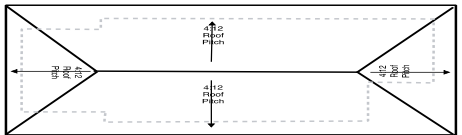


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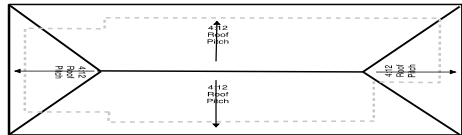


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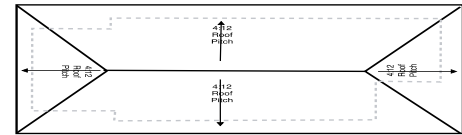
Why Batch Size Matters



105



103



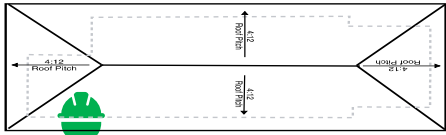
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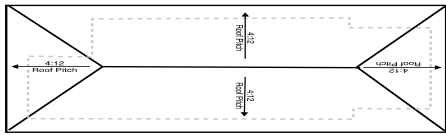
Tiny House Street West



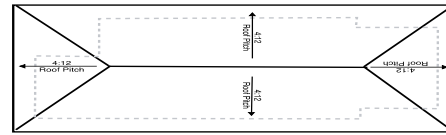
102



106



104



Activity: Tiny Home Phase Pull Plan

- **Preparation – 15 Min**
 - Select Milestone
 - Define CoS
 - Create Area/Batch & Flow Plan
- **Trade Preparation – 10 Min**
 - Activities & Duration Estimates
- **Create Phase Pull Plan – 20 Min**
 - Pull Activities
 - Validate Plan

60 Minutes





Weekly Planning Meetings

Weekly planning activities and tools that encompass the remaining conversations of LPS – Can, Will, Did and Learning.

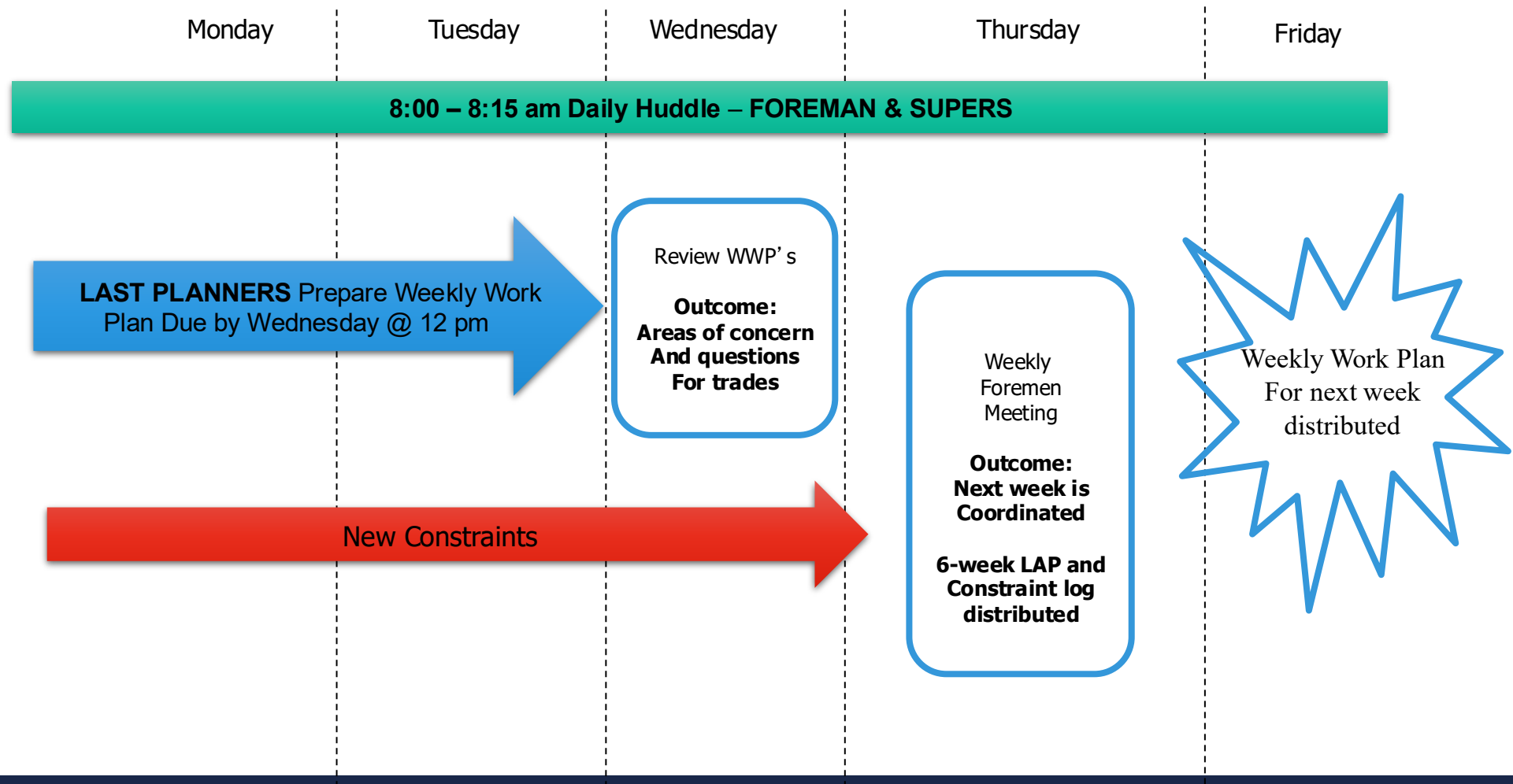
Weekly Planning Conversations

- Look Ahead Planning
- Weekly Work Planning
- Learning & Improving
- Celebrating Wins
- Building Trust



Courtesy of: JE Dunn

Weekly Planning Cycle





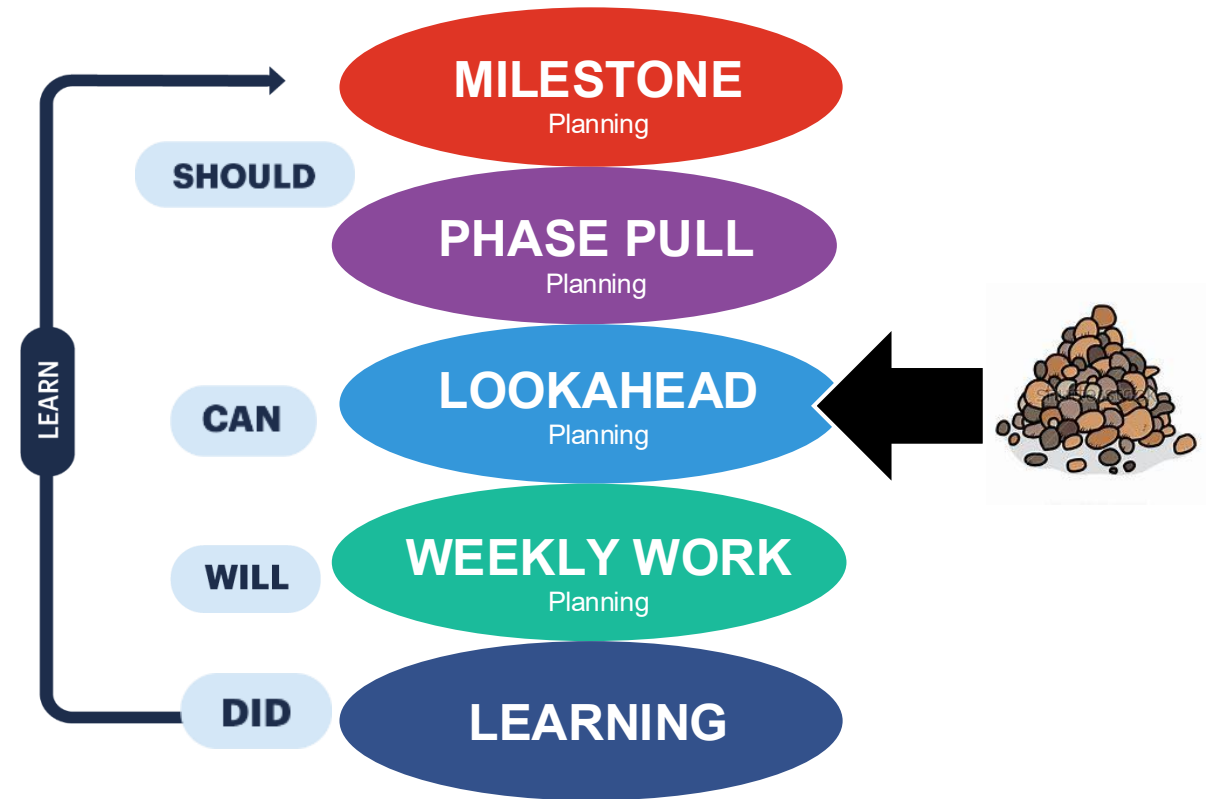
Lookahead Planning

The third conversation of LPS is ***Lookahead Planning***.

This level focuses on making work ready or assuring that the work that *should* be done, *can* be done by identifying and **removing constraints** in advance of need.

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

5 Connected Conversations



LookAhead Planning



Project:									
Project No.:									
Responsible Person:									
Constraint Number	Activity Number	Constraint Description	RFI No.	Responsible Person	Responsible Company	Date Identified	Date Need Resolution	Date Resolution Promised	Actual Date Resolved

Constraint Log

- Transferred from the *Phase Pull Plan* to a plan with dates/weeks.
- Boards, vPlanner, Touchplan, P6 or other software documentation.
- Rolling (4-8 weeks) Lookahead to **“make work ready”**.
- Supports Team Meeting Discussion/Action for:
 - *Risk Log*
 - *Constraint Log (roadblocks)*
 - Informs the *Weekly Work Plan*

Constraint Log Example

Project: Project No.: Responsible Person:									
Constraint Number	Activity Number	Constraint Description	RFI No.	Responsible Person	Responsible Company	Date Identified	Date Need Resolution	Date Resolution Promised	Actual Date Resolved

CONSTRAINT
DESCRIPTION

RESPONSIBLE
PERSON & CO

DATE
IDENTIFIED

DATE
NEEDED

DATE
RESOLVED

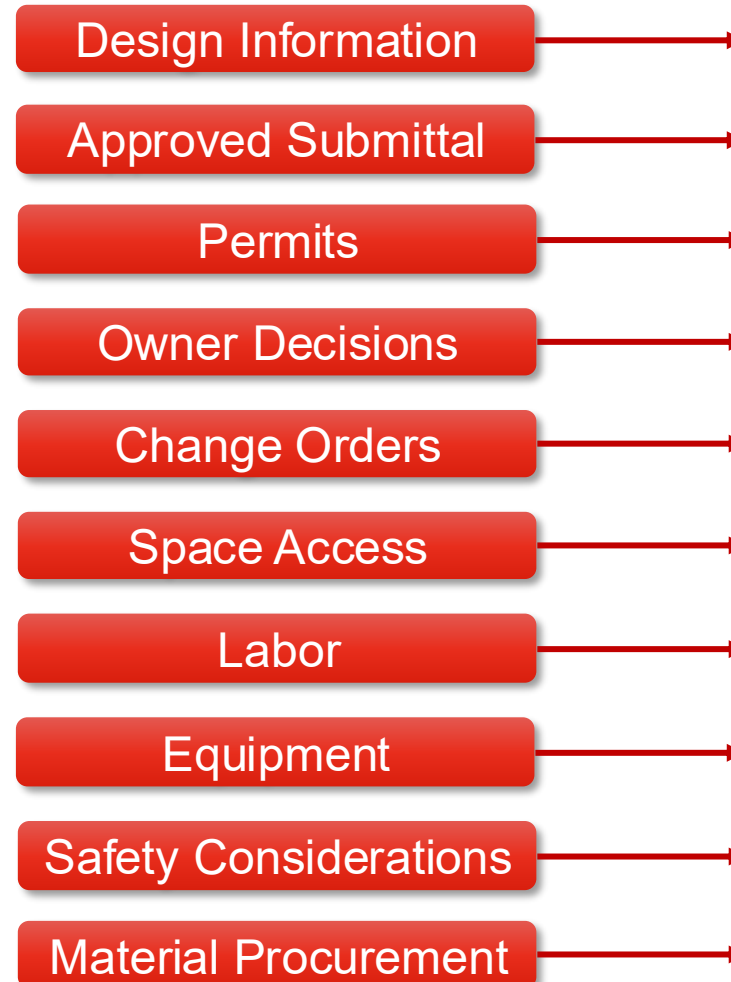
DATE
PROMISED



Constraint Defined

Constraint:

An item or requirement that will prevent an activity from starting, advancing or completing as planned.

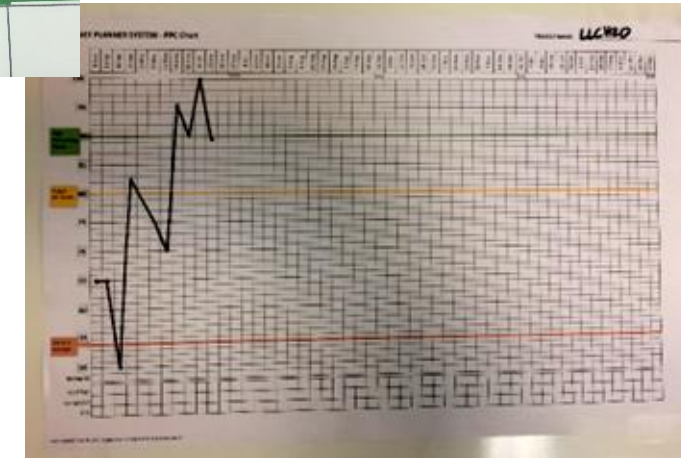


**Task
Activity**



Weekly Planning Meeting: Round 1 Agenda

- Review Plus/ Delta
- General announcements
- Look Ahead Plan Update
 - Rotate and add new activities
 - Update existing constraints
 - Identify new constraints
- Last Week's PPC/ Variances
- Weekly Work Plan created/negotiated for next week
- Round Robin to address any new issues not covered
- Plus/Delta



Activity: Tiny Home Look Ahead Plan

- Create 1-Week Lookahead Plan
 - Pick the starting Milestone, 1 week worth of activities for your team
 - Follow the color legend, each trade uses their color sticky notes
 - Tags will be more detailed than Phase Pull Plan tags
 - Create swim lanes by area if needed

10 Minutes





Activity: Tiny Home Constraint Log Update

- Review Look Ahead Plan
 - Activity Starts – Make Ready
 - Set a date out 6 weeks
- Identify Constraints
 - For each activity start, deal a 'Constraint Card'
 - Record any constraints on the log
 - Correlate to look ahead plan with dots





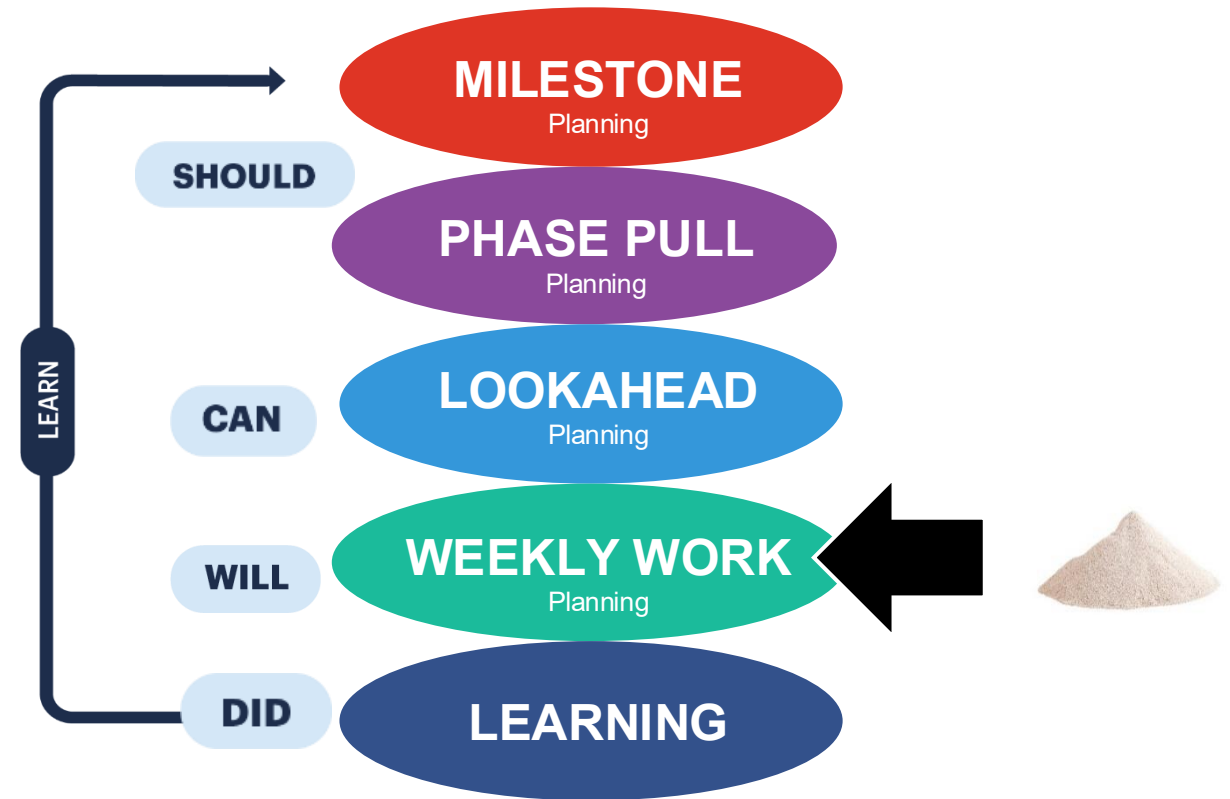
Weekly Work Planning

The fourth conversation of LPS is *Weekly Work Planning. (WWP)*

The goal of this level is for the Last Planners to *establish the plan* for the upcoming week at the daily level.

The conversation is I **“will”** do this.

5 Connected Conversations



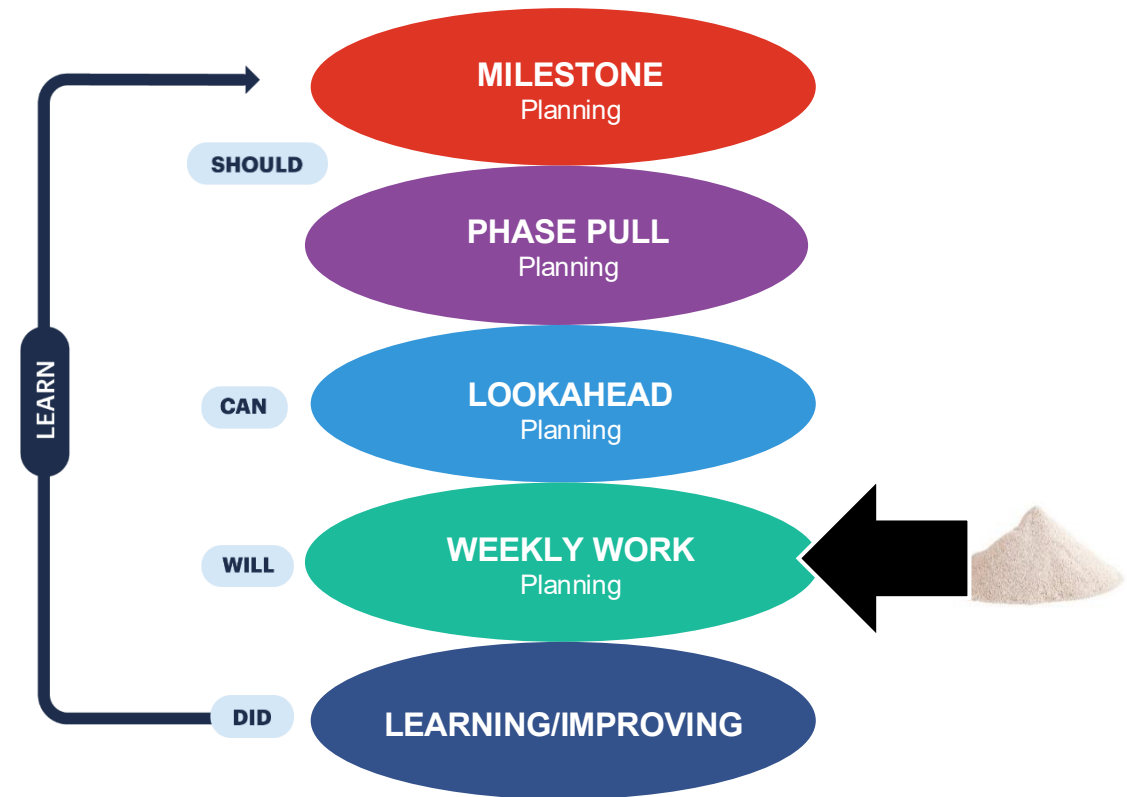
Weekly Work Planning

This is the level that the team identifies the ***promised task completions*** agreed upon by the *Performers* for the upcoming week.

The WWP is used to determine the *success* of the planning effort and to determine what *factors limit performance*. And is the basis of measuring **PPC** (**Percent Plan Complete**).

This is done during a *Check-in Session* or *Huddle*.

5 Connected Conversations





Weekly Work Planning

- Informed by the Look Ahead Plan
- Detail work by trade at the Daily Level
- Detailing of the next week
- Informs the Daily Huddle
- Take to the field

WEEKLY WORK PLAN													
Area:		CATEGORY* OF PLAN FAILURE								TOTAL ACTIVITIES			
Contractor:		1 Coordination	5 Prerequisite Work	9 Submittals	13 Space	ACTIVITIES COMPLETED				10			
Shift:		2 Design	6 Labor	10 Approvals	14 Site Conditions	PERCENT PLAN				50%			
Last Planner:		3 Owner Decision	7 Materials	11 Equipment	15	COMPLETE (PPC)							
		4 Weather	8 Contracts/COs	12 RFIs	16								
Activity ID	ASSIGNMENT DESCRIPTION Safe - Defined - Sound - Proper Sequence - Right Size - Able to Learn	Responsible Person	Start Date 05-Oct-09							DONE?		LEARNING	Category*
			Mon	Tue	Wed	Thu	Fri	Sat	Sun	YES	NO		
Column Grid A1 - G8													
	Joes Framing	Bill											
7055	Top Track Install		4	4						1			
7060	Framing Walls			4	4					1			
7065	Backing Install				4	4					0	IOR not available	10
	Sparky's Electrical	Jim											
1605	Rough in Walls			2	2	2	2			1			
1610	Rough in Ceilings					2	2	2			0	Need grid elevation layout	5
	Acme Mechanical												
1505	Plumbing - in wall rough in - Install				2						0	Walls not inspected	10
1510	Plumbing - ceiling rough in - Install					2					0		
Column Grid G9 - J 12 Kitchen servery													
	Joes Framing	Bill											
7055	Top Track Install						4			1			
7060	Framing Walls							4		1			
7065	Backing Install								2		0	room not available	1
	Workable Backlog (My "Plan B": What work can I do without affecting other trades if above plan breaks down?)										5		

Weekly Work Planning



Weekly Work Plan *Informs* the Daily Huddle



109

Courtesy of: PCL Construction



Courtesy of: Turner/DPR JV



Weekly Work Planning Example

“What, Where,
Who & When”

WEEKLY WORK PLAN													Work Beginning:	
Area:		CATEGORIES OF PLAN FAILURE										TOTAL ACTIVITIES		31
Contractor:		1 Coordination		5 Prerequisite Work		9 Submittals		13 Space		ACTIVITIES COMPLETED				
Shift:		2 Eng/Design		6 Labor		10 Approvals		14 Site Conditions		PERCENT PLANNED				
Last Planner:		3 Owner Decision		7 Materials		11 Equipment		15		COMPLETE			0%	
		4 Weather		8 Contracts/COs		12 RFIs		16						
Activity ID	Commitment Description Safe - Defined - Sound - Proper Sequence - Right Size - Able to Learn	Responsible Person	Start Date		1/28					DONE?		LEARNING		Category
			Mon	Tue	Wed	Thu	Fri	Sat	Sun	YES	NO	REASONS FOR PLAN FAILURE		
1	Pour new moat floor on the south side of the building	B.A.M	4	4										
2	Adjust (4) down spouts on the south side of the building	B.A.M	2	2	2									
3	Patch masonry around 6 conductor boxes on the roof	B.A.M	1	1	1	1	1							
4	Install base on 2nd floor in the south side class rooms	B.A.M		3	2	3	3							
5	Install wainscoting on the first floor north side	B.A.M		4	3	4								
6														
7														
8	Pull wire for Chiller	Ryan	5											
9	Security rough-in on all floors	Ryan	2	3	3	3	3							
10	Basement rough-in complete	Ryan	4	4	4	4	4							
11														
12	Hang and finish all rated chases	Fred			3	3								
13	Reframe and hang dry wall in hallway 121	Fred	4	4	4	3	5							
14	Sand dry wall in hallway 139	Fred	2	2										
15	Finish dry wall in west class room 107,144	Fred	3	3	3	3								
16														
17														
18	Rough-in media center ceiling	Troy	5											
19	Get fresh air duct inspected in attic	Troy				6								
20	Get north west chase duct inspected	Troy				6								
21	Insulate north west chase duct	Troy			4									
22	Tie in vav boxes in the attic	Troy	3	3	3									
23	Start tying in vav boxes in the east wing 1st and 2nd floors	Troy	4	4	4	4								

What & Where?

Crew Size?

Who?

When will it be done?

What & Where?

Crew Size?

Who?

When will it be done?



Weekly Planning Meeting: Round 1 Agenda

- ~~Review Plus/Delta~~



- General announcements



- Look Ahead Plan Update

- Rotate and add new activities
- Update existing constraints
- Identify new constraints

- ~~Last Week's PPC/ Variances~~



- Weekly Work Plan created/negotiated for next week



- Round Robin to address any new issues not covered



- Plus/Delta



Weekly Work Planning: Preparation

Questions to ask when preparing for the WWP:

- Will I have the appropriate amount of people on site to perform the work?
- Do I have the materials and processes needed?
- Is it the right sequence?
- Is it safe?
- Are there any open constraints that need to be resolved?
- Do the tasks tie directly to look ahead plan? If no, ask why?





Learning While Doing

Executing the weekly work plan, daily huddles, variances and tracking plan reliability.



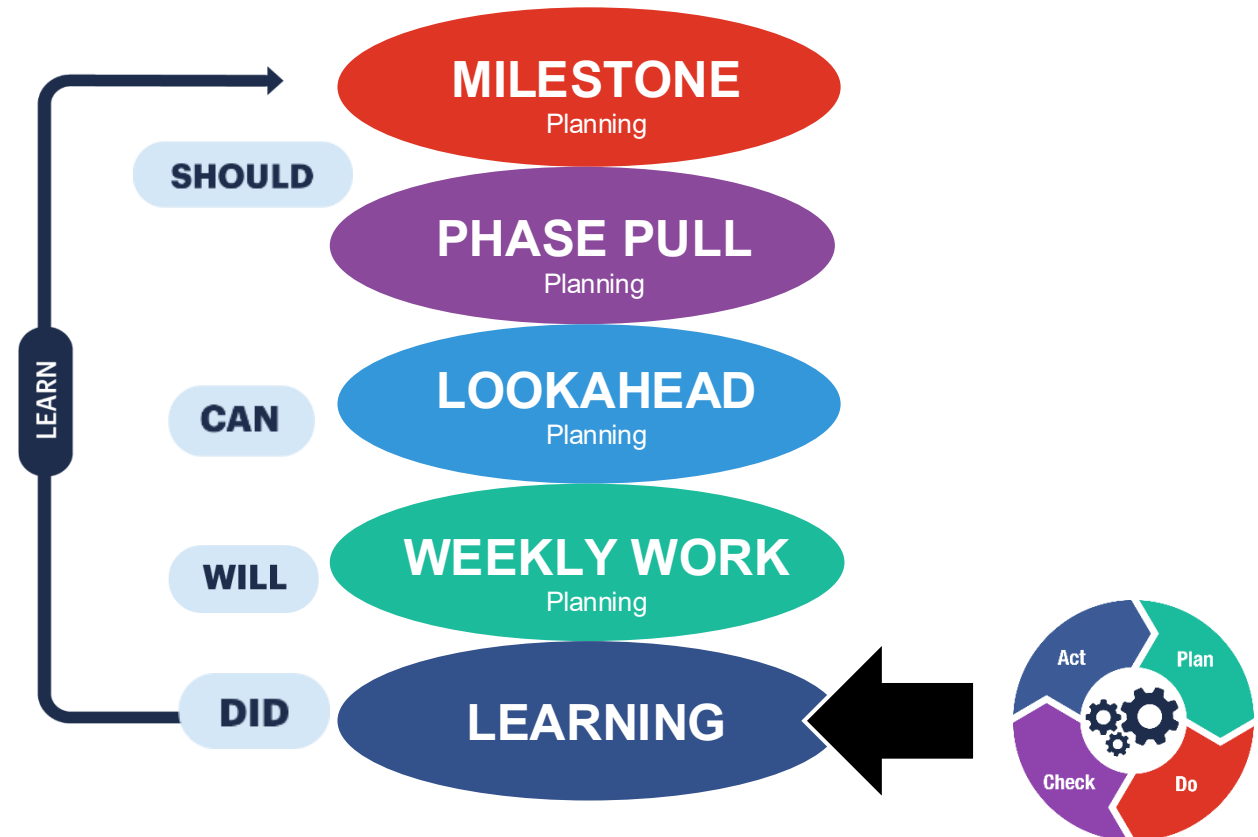
Learning/Improving

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**”.

5 Connected Conversations



Daily Huddle

1. What ***did*** I complete?
2. What ***will*** I complete?
3. What needs to be ***re-planned***?
4. How can we ***improve*** future planning?



Photo Courtesy of: KHS&S



Daily Huddle: How

Superintendents/Foremen huddle every day:

- Status Weekly Work Plan Daily
- Held in front of Weekly Work Plan Boards
 - Or with Weekly Work Plan in hand
- Be respectful time
 - 10-15 minutes
- Each Superintendent/Foreman report out on their work



Daily Huddle

Photos Courtesy of: Landis Construction



Photos Courtesy of: Brasfield & Gorrie



Learning From Daily Huddles

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*



Photo Courtesy of: DPR Construction



The Importance of PPC

As Planned

$$\text{WEEKLY PPC} = \frac{\# \text{ Completed Activities}}{\# \text{ Planned Activities}} = \frac{16}{20} = 80\%$$



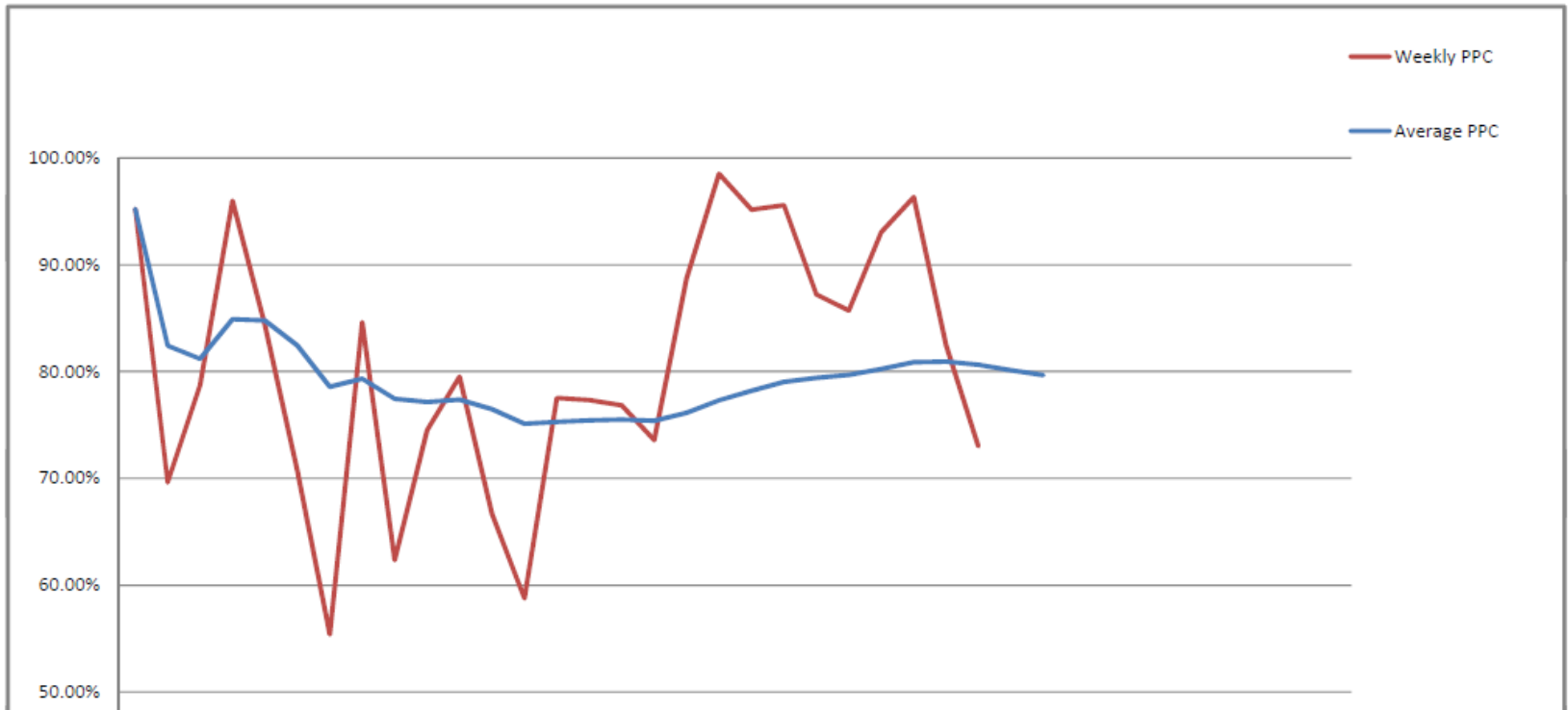
Percent Plan Complete (Plan Percent Complete)

PROJECT AREA THEATERS

OVERALL PLAN PERCENT COMPLETE

Current Overall PPC = 79.67%
 As of: 6/1/2014

Week #	Week Ending	Number of Tasks	Number Completed	PPC	Average	Tasks Not Done
1	11/17/2013	21	20	95.24%	95.24%	1
2	11/24/2013	79	55	69.62%	82.43%	24
3	12/1/2013	47	37	78.72%	81.19%	10
4	12/8/2013	50	48	96.00%	84.90%	2
5	12/15/2013	83	70	84.34%	84.78%	13
6	12/22/2013	99	70	70.71%	82.44%	29
7	12/29/2013	65	36	55.38%	78.57%	29
8	1/5/2014	52	44	84.62%	79.33%	8
9	1/12/2014	85	53	62.35%	77.44%	32
10	1/19/2014	98	73	74.49%	77.15%	25
11	1/26/2014	83	66	79.52%	77.36%	17
12	2/2/2014	66	44	66.67%	76.47%	22
13	2/9/2014	97	57	58.76%	75.11%	40
14	2/16/2014	89	69	77.53%	75.28%	20
15	2/23/2014	97	75	77.32%	75.42%	22
16	3/2/2014	82	63	76.83%	75.51%	19
17	3/9/2014	106	78	73.58%	75.39%	28
18	3/16/2014	80	71	88.75%	76.13%	9
19	3/23/2014	67	66	98.51%	77.31%	1





Reasons For Variance

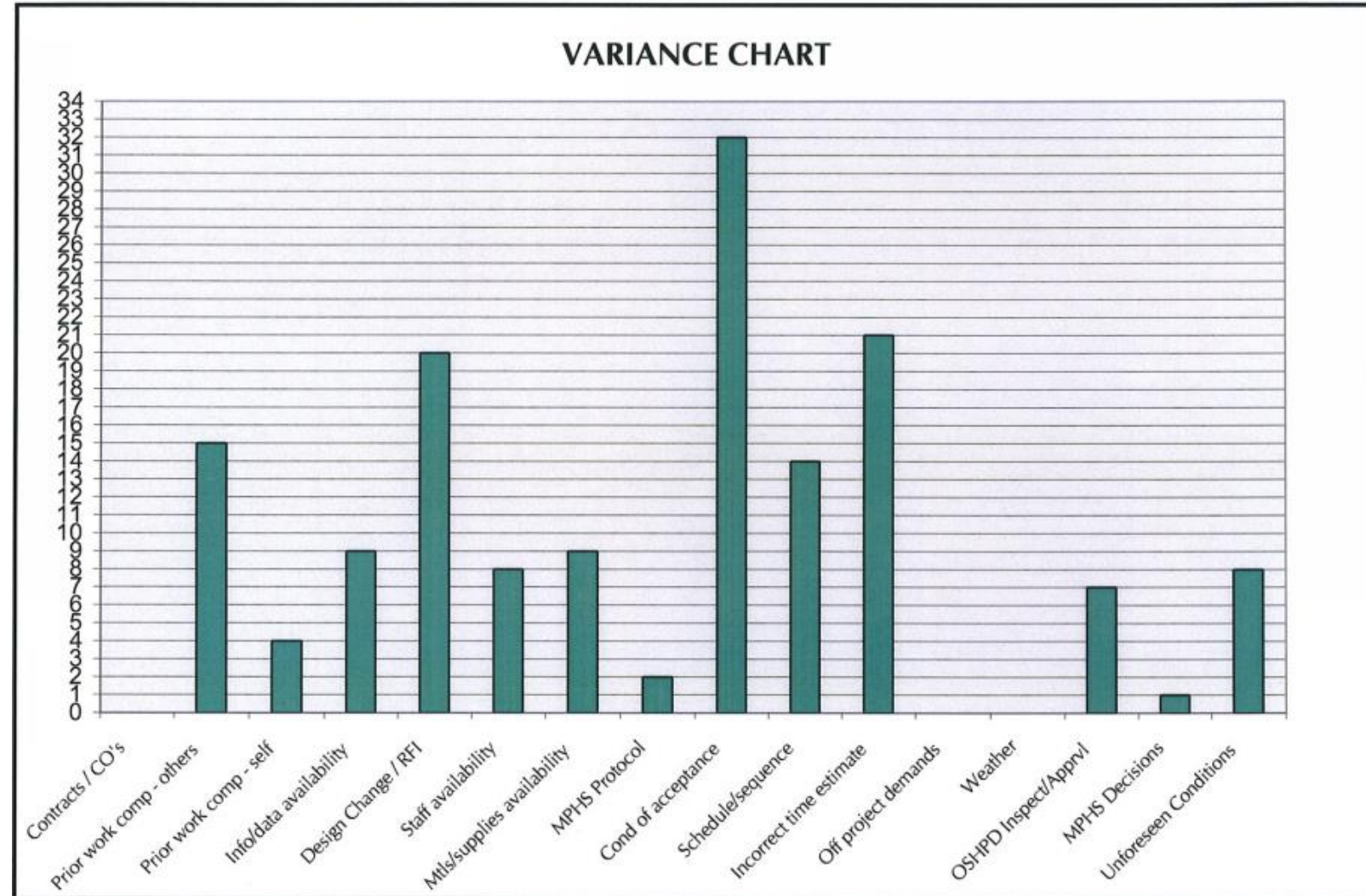
- Factors that prevented a task from being completed as promised.
- Used by the team to promote learning concerning the failure of the planning system to produce a predictable workflow.
- Assigned a category of variance.
- Enable a team to identify those areas of recurring failure that require additional reflection and analysis.





Taking Action For Variance

When a variance or failure occurs, the team must **discuss the likelihood** of it occurring again and determine ***actions to mitigate as such.***



Successful Weekly Planning Meetings

- **Consistency** is key
 - Start on time/ end on time.
 - Assign a timekeeper.
 - Everyone in the room that needs to be there.
 - Same expectations for everyone.
- Everyone's voice is heard.
- Last Planners talk more than the facilitator.
- Lookahead plans distributed weekly, up to date, and aligns with master schedule and Weekly Work Plan.
- Use Parking lot.



Weekly Planning Meeting 2 (and subsequent)

- Review Plus/ Delta
- General announcements
- Last Weeks PPC/ Variances
- Current WWP Check-in
- Look Ahead Plan Update
 - Rotate and add new activities
 - Update existing constraints
 - Identify new constraints
- Weekly Work Plan created/negotiated for next week
- Round Robin to address any new issues not covered
- Plus/Delta

Wrap Up – Report Out & Questions from Activities?

Revisit Flip Chart – Key Take-Aways

Revisit Flip Chart from the discussion in the morning:

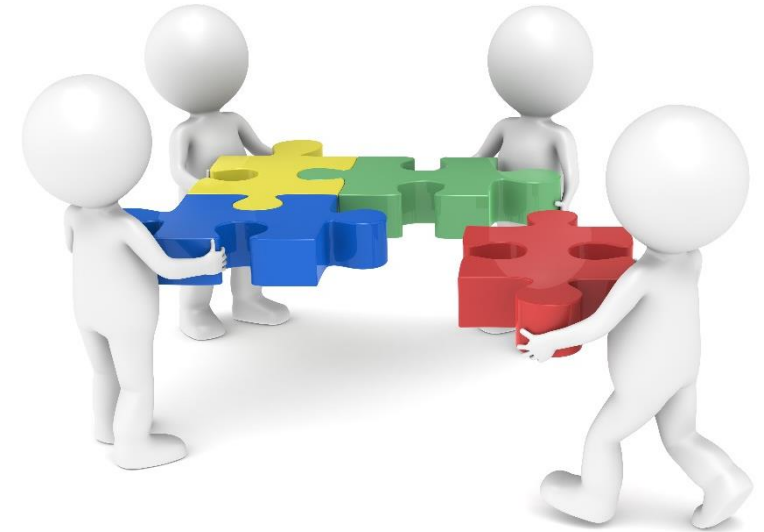
What have you seen or learned that will influence your approach to LPS and Last Planners.



- **Next Actions?**
- What next actions will you take to continue to implement your learning today?

Remember.....

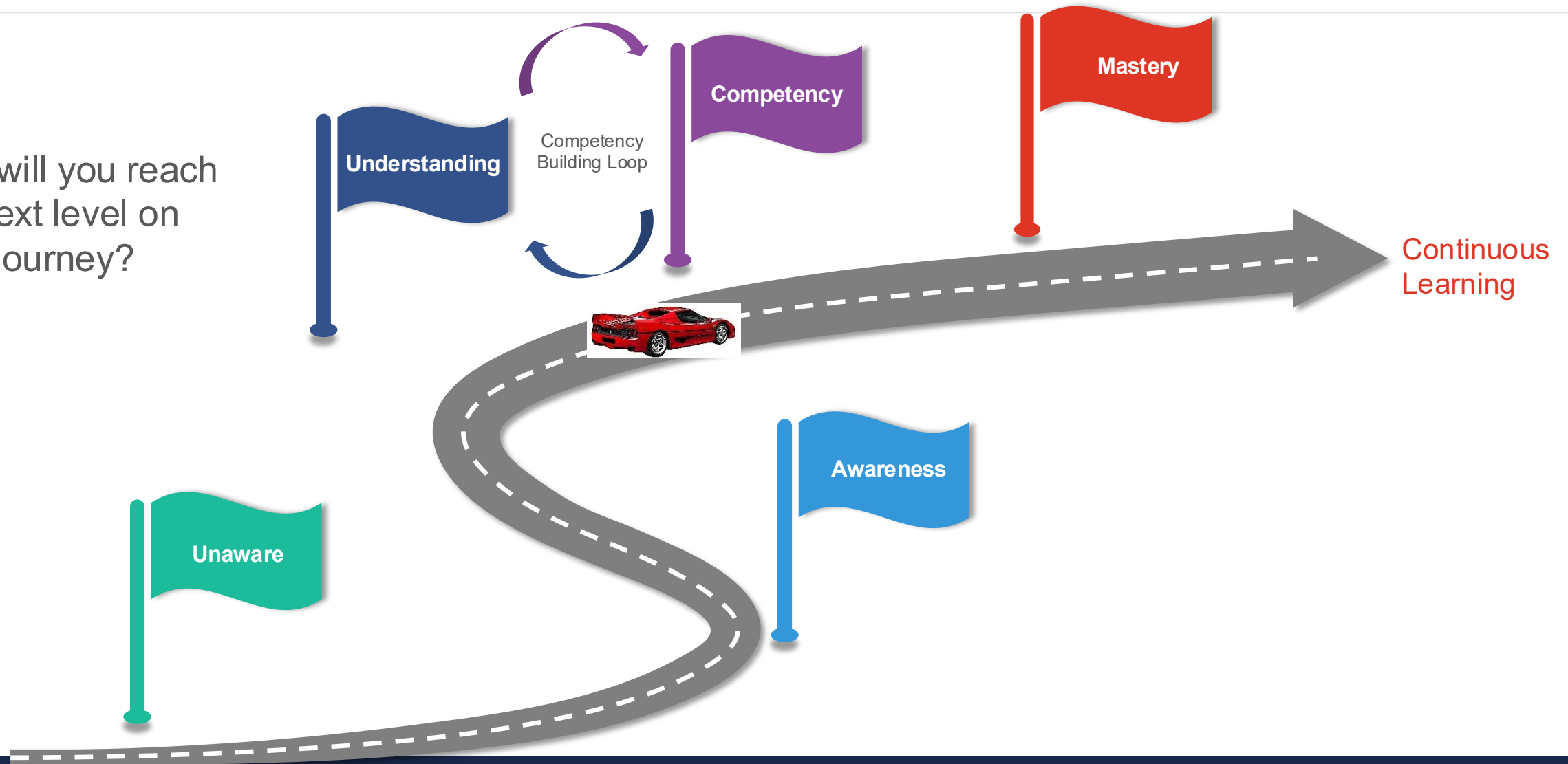
- Your forms and other artifacts may *look different* from what we showed you today. Or even different from project to project.
- That is not a problem – as long as you are staying true to the ***foundational principles of LPS*** – the **right people having the right conversations** in order to make and keep reliable commitments.
- Likewise the forms and artifacts don't make the system work. It's the *conversations coupled with continuous improvements* that make the system work.





Lean Journey to Mastery

How will you reach
the next level on
your journey?



Learning Objectives Reviewed



Identify the essential foundational principles of each of the 5 connected conversations of LPS.



Engage in all of the connected conversations of LPS® from Milestone Planning to daily interaction through practical application.



Experience the process of constraint management to improve project workflow.



Gain practical insight to effectively use Percent Plan Complete (PPC) and variance to improve reliable project plan execution.

Questions?



Conduct Plus/Delta



Plus: What produced *value* during the session?



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

+	▲

Contacts



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Benefits of LPS

1. Improves communication & reliability.
2. Fosters an enjoyable environment, trust, and collaboration.
3. Promotes early stakeholder engagement.
4. Improves visibility of the project plan (transparency).
5. Creates team buy in.
6. Rapid learning through metrics, revealing areas for improvement.
7. Improves planning in both design & construction phases.



Table Discussion:

1. How would a trade partner use LPS, even if the GC does not?
2. What should you do when the plan fails in a big way?
3. What can you do to help create “aha” moments to get others on board?
4. How might you scale the system for a small project? A large project?
5. What would you expect to see, feel and hear on a high performing project?

Timing dependent?

