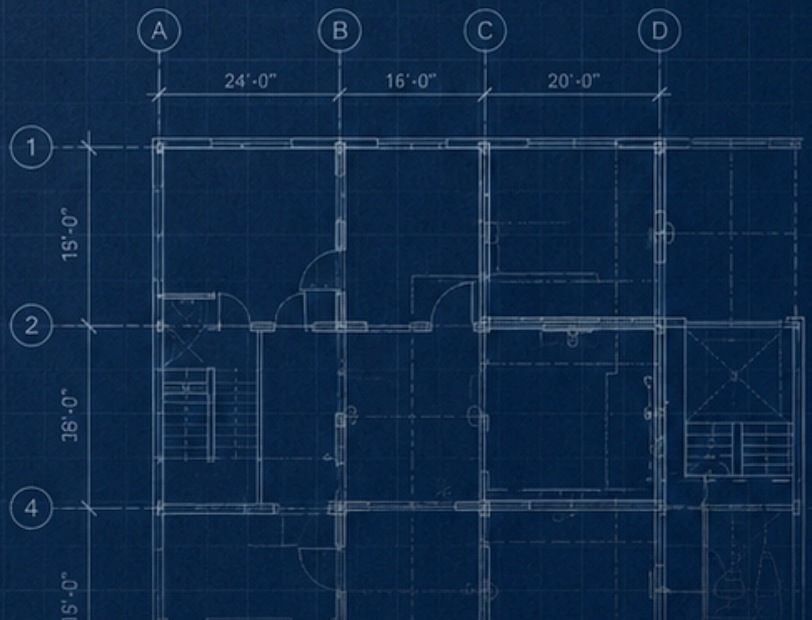


IPCS™

ONSITE GUIDEBOOK





This guidebook for the Integrated Production Control System™ is all about providing standards and expectations for a project. I want every field builder to have this in their hand. To run a Lean project, you have to focus on every component and every step.

Please use this guide to audit your project and take your next step. Lean ultimately leads to improvement. But where should we focus those efforts? The answer is easy... We improve where the system is weak. I hope you enjoy using this guidebook to take your next step.

On we go,
Jason

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IPCS™
INTEGRATED PROJECT CONTROL SYSTEM

01 IPCS™ CHECKLISTS



IPCS™

FIRST PLANNER SYSTEM®

EXTERNAL FACTORS
- POWER TO SEE THE PARADIGM
- MINDSETS & PARADIGMS
- GOALS OF THE SYSTEM
- STRUCTURE OF THE SYSTEM
- RULES OF THE SYSTEM

DESIGN & PRECON
- PROJECT PROPOSAL
- BUILD THE DESIGN TEAM
- ENABLE DESIGN
- BUILDER PLANNING
- START STRONG

PRODUCTION SYSTEM
TEAM
- BUILD PROJECT TEAM
- TEAM BALANCE
- INDIVIDUAL BALANCE

PLAN
- THE PRODUCTION PLAN
- LEAN IN CONTRACTS
- MANAGE RISKS

SUPPLY CHAIN
- PROCURE RESOURCES
- PREFAB
- LOGISTICS

CULTURE
- WIN OVER THE WORKFORCE
- CLEAN, SAFE, & ORGANIZED PROJECT
- ONBOARDING & ORIENTATION

TRADE PARTNER PREPARATION PROCESS
- BUYOUT
- PRE-MOBILIZATION
- PRE-CON MEETINGS
- FIRST IN PLACE
- FOLLOW-UP INSPECTION
- FINAL INSPECTION
- SAFETY
- QUALITY

TAKT PRODUCTION SYSTEM®

TAKT PLANNING
- TAKT PLAN CREATION
- PLAN USE & MANAGEMENT
- FIRST PLANNER® & LAST PLANNER® COLLABORATION

TAKT STEERING AND CONTROL
- CONSTRAINT MANAGEMENT
- ROADBLOCK REMOVAL
- ZONE CONTROL
- DELAY MANAGEMENT

ACCOUNTABILITY
- ZERO TOLERANCE
- DAILY CORRECTION SYSTEM
- QUALITY AT THE SOURCE
- TEAM HEALTH SCORE
- CONTRACTOR GRADING

KAIZEN
- QUALITY
- CONTINUOUS IMPROVEMENT
- CUSTOMER NEEDS & WANTS

KPIS
- CONDITIONS OF SATISFACTION
- LEADING INDICATORS
- LAGGING INDICATORS

LAST PLANNER® SYSTEM
- MEETING & HUDDLE SYSTEM
- COLLABORATION
- PLANNING DELIVERABLES

ALL INFORMATION, TOOLS, AND MATERIALS FLOW THROUGH THESE SYSTEMS AT THE RIGHT TIME SO THE FOREMEN CAN HELP THEIR CREWS BUILD IT RIGHT.



ONE SYSTEM • ONE PLAN • ONE TEAM • ONE FLOW TO THE FOREMEN

ELEVATING CONSTRUCTION THE LEAN WAY

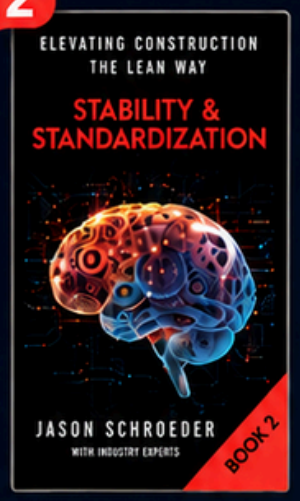
6 CORE LEAN CONCEPTS

1 Respect for People, Nature, & Resources



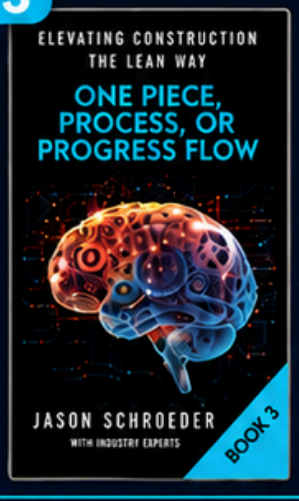
- Fundamentally Respect the Individual
- Never Blame People
- Elevate Humanity
- Train Shoulder-To-Shoulder
- Do Not Be a Burden to Others

2 Stability & Standardization



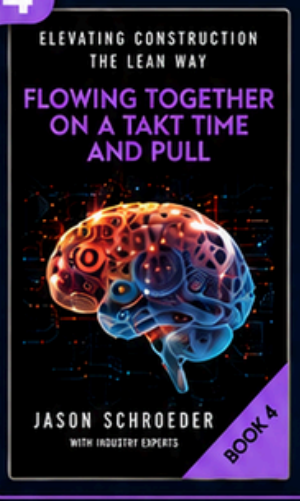
- Stabilize Cleanliness, Safety, and Organization
- Standardize with Standard Work
- Create Repeatable Processes
- Reduce Variation Before Optimization
- Hold the Gains Daily

3 One Piece, Process, or Progress Flow



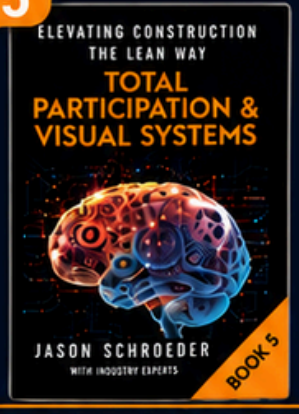
- Optimize the Flow of Work
- Reduce Batch Sizes
- Keep Work Moving Zone to Zone
- Remove Roadblocks Quickly
- See Progress as Product in Motion

4 Flowing Together on a Takt Time & Pull



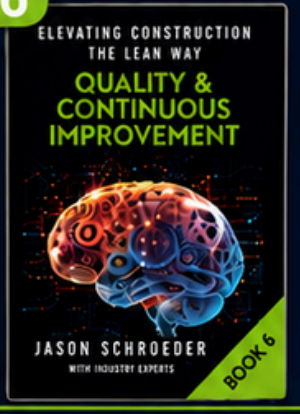
- Takt First, Pull Second
- Flow on a Rhythm
- Balance Trades by Zone
- Hand Off Work with Reliability
- Let Demand Trigger Movement

5 Total Participation & Visual Systems



- Win over the Workforce
- Make Everything Visual
- Involve Everyone in Improvement
- Build Daily Accountability
- See Problems Early

6 Quality & Continuous Improvement



- Focus on Quality at the Source
- Improve Based on Standards
- Stop to Fix Problems
- Learn Through PDCA
- Make Improvement Continuous

PEOPLE FIRST | STABLE FOUNDATIONS | FLOW EVERYWHERE | VISUALIZE & ENGAGE | IMPROVE FOREVER

LEAN PRINCIPLES. REAL IMPACT. BETTER CONSTRUCTION.

01

IPCS™ CHECKLISTS

LEAN BEHAVIORS 1.0



01	☐	Everyone knows how to be safe in their task.
02	☐	Everyone knows what they are installing.
03	☐	Everyone makes improvements daily.
04	☐	Keep bathrooms clean.
05	☐	Be good neighbors & take care of customer needs.
06	☐	Nothing hits the floor. No materials, trash, nor any other items hit the floor.
07	☐	Just-in-Time deliveries & scheduled deliveries: Create correctly sized material inventory buffers for all material & coordination daily.
08	☐	All cords are off the floor & managed in a remarkable way.
09	☐	Everything is on wheels, pipe racks, or painted pallets.
10	☐	All access ways are clear at all times.
11	☐	Organize workspaces- Everything clean & organized. A place for everything; everything in its place.
12	☐	Pull work behind you- Nothing left behind, clear & sweep your areas, & leave the area completely finished.

02

IPCS™ CHECKLISTS

LEAN BEHAVIORS 2.0



01	☐	Everything we do is based in respect for people.
02	☐	We do not waste resources. Reduce, reuse, and recycle.
03	☐	Build one team. Criticizing, complaining, comparing, competing, and contending create the 9th waste of unhealthy conflict.
04	☐	Build people before things. Always train before doing the work.
05	☐	Your work is your brand. Take pride in craftsmanship.
06	☐	We are not a burden to others: the public, vendors, delivery drivers, or other crews. Treat them like customers.
07	☐	Workers and foremen are the heroes. And everyone supports the heroes. All we do is to add value to them.
08	☐	Align work in progress to capacity. Never overburden people or the system.
09	☐	We do not start a task until we are ready to finish. Always begin with full kit.
10	☐	Only bring in materials just-in-time, through level and perfectly organized staging yards, kitted for transport to the place of work with little waste or packing trash.
11	☐	Stop, call, and wait if you see variation or problems. Never push through. Never rush. Stop production and solve the problem at the source.
12	☐	Problems are not a problem. The only problem is thinking we don't have problems. All meetings and interactions focus on identifying, discussing, and solving problems to clear the way.
13	☐	Don't fight fires. Focus on finding and removing roadblocks before they impact your work and look for bottlenecks in the field.
14	☐	Stop focusing on goals and profit. Focus on quality.

02 FIRST PLANNER SYSTEM®



EXTERNAL FACTORS

Playing the hand you've been dealt

>> LIKELY OUTSIDE YOUR CONTROL



We appreciate your expertise. We commend you for learning and growing professionally; we respect the years you've put into your craft and career. We told you that so we can tell you this—the deck may be stacked against you as you attempt to enable foremen, and no matter what hand you play, the house always wins. We're not against owners, but they can make it difficult, if not impossible, to implement lean systems successfully. We believe in protecting workers and foremen with Lean practices. These are a few areas where you may need to formulate a strategic plan to offset the owner's greed, ignorance, or ego. They are listed here so you can see them early and make a plan to remove or work around them.

PARADIGMS

Do the owners, designers and builders see the lean paradigm? Do they respect people, support stability, and encourage flow? If you have an owner that wants to push people and cut costs, the system will not work.

MINDSET

Do the stakeholders and leaders have a mindset that respects people as a top priority? If owners tend to push people/trades to work harder and faster, you will have decision makers that don't respect people and the project will suffer.

GOALS OF THE SYSTEM

Is the goal to finish the project on time? If there is someone that wants to look good and grandstand, the goal will switch from finishing on time to cutting budgets with old methods, fighting fires instead of preventing them. Find the goal.

SYSTEM STRUCTURE

Is the project delivery structure proper for the goal? If you have an owner or business leaders that will not allow the use of Lean methods, production plans, and proper project planning, the project will likely fail.

RULES OF THE SYSTEM

Do rules allow the team to succeed? If the owner or govt. specifies rules that hinder the project, like being forced to use CPM, dictating the overburden of trades, and denying reasonable delay claims, the team may suffer and fail.



PRE-CONSTRUCTION STEPS
FIRST PLANNER SYSTEM®



PROJECT PROPOSAL + INTERVIEW

- Establish Conditions of Satisfaction
- Understand owner goals and priorities
- Run process with an OPUR
- Build Macro production plan deliverables
- Review and showcase three things



BUILD THE DESIGN TEAM + SET THE GOAL

- Confirm Macro plan with CM
- Create logistics and zone maps
- Aligne team, meetings, and schedule
- Set targets with TVD
- Stand up design planning system



SUPPORT + ENABLE THE DESIGNERS

- Support long lead/early procurement
- Design to the work package
- Involve VDC and design pre-fab
- Provide real-time schedule/budget updates
- Collaborate on risk and permitting



PLAN WITH THE BUILDERS

- Gather builders, create standard work
- Create Norm level takt/production plans
- Create Lean inclusions for contracts
- Research reference class, update risks
- Host fresh eyes, make corrections



PREPARE TO START STRONG

- Support trade partner preparation (TP3)
- Hold owner pre-construction meeting
- Order supplies, confirm contracts
- Schedule starting activities, post documentation
- Send impact notice, start fast

Here is a timeline you can reference so you generally know when the Macro and Norm are created in pre-construction.

Takt Production Timeline Legend

1. ESTABLISH
Conditions of satisfaction

2. UNDERSTAND
The owners' goals and priorities developed through the construction manager's project charter

3. CREATE
Macro Takt Plan

4. CONFIRM
GCs and GRs with the CM

5. CREATE
Logistics plan and zone maps to match

6. SUPPORT
Long lead early procurement

7. BUILD
Your LEGO® process to design to the work package

8. IDENTIFY
What needs to be pre-fabricated

9. DESIGN
Human systems on-site

10. INVOLVE
VDC services for design support and QC

11. ALIGN
With the CM on team organization, meetings, and schedule maintenance

12. SUPPORT
The organizing of the project team

13. COLLABORATE
Create interactive plans

14. CREATE
Norm Takt Plans.

15. UPDATE
- Update Norm zoning
- Update all six logistics maps

16. CREATE
The Lean inclusions for contracts

17. PARTICIPATE
In the creation of the risk and opportunity register

18. RESEARCH
Study the reference class

19. HOST
A "fresh eyes" meeting x 3

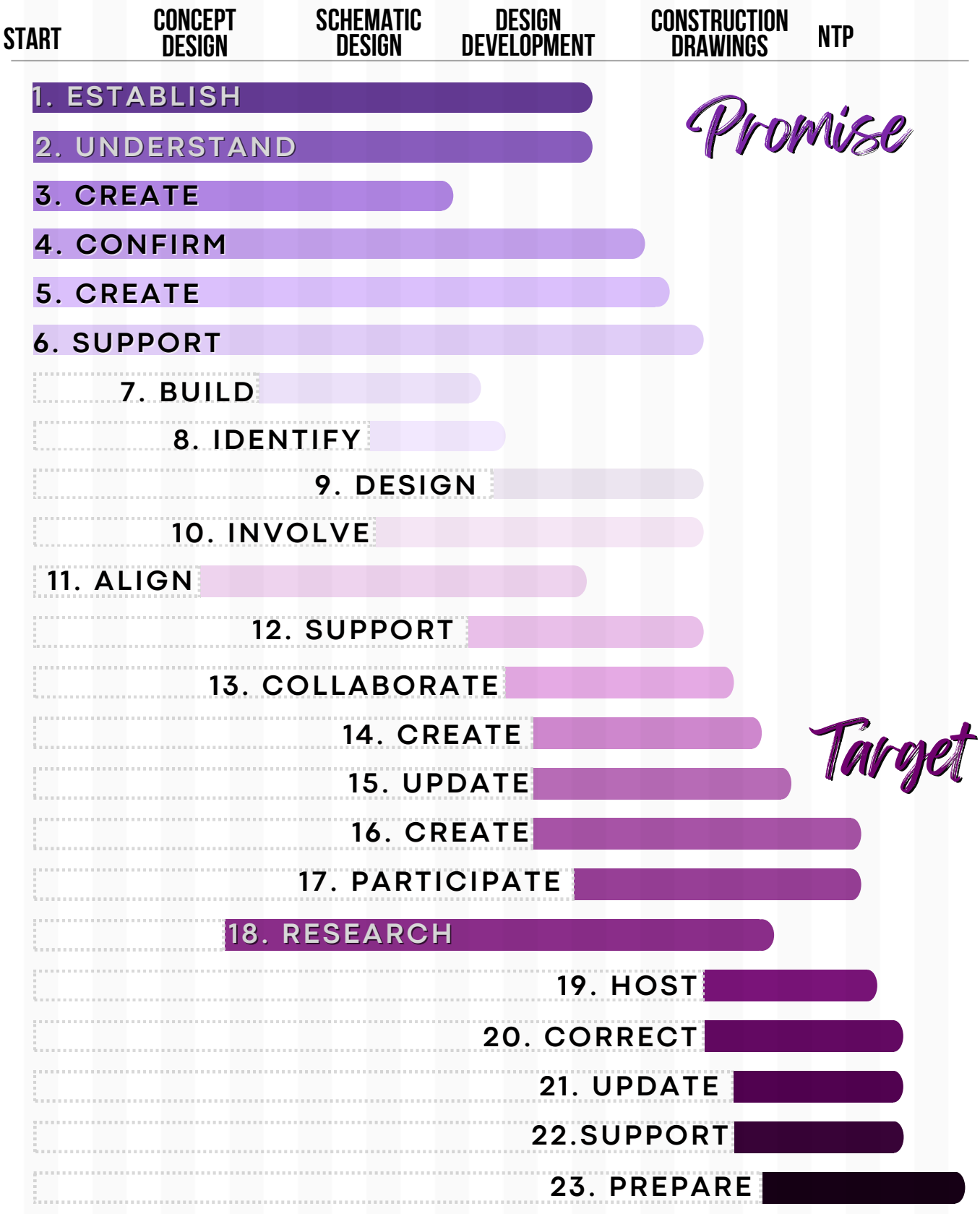
20. CORRECT
Make all needed corrections x 3

21. UPDATE
The risk and opportunity register

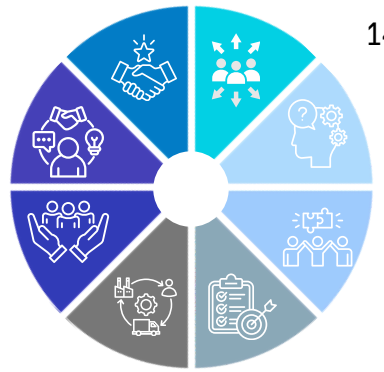
22.SUPPORT
The trade partner preparation process is crucial for alignment

23. PREPARE
To start strong

Takt Production Timeline



First Planner System®



External Factors

1. You have a supportive owner that enables you to do your job, who respects people, and wants to build Lean
2. Your company leaders, all company stakeholders, and other influencers will support you and want to build the Lean way
3. The goal of the project is to finish on time while respecting people
4. The structure of the project system enables you to build the Lean way
5. The rules setup in your contracts enable you to build the Lean way

Pre-Construction Planning

1. Begin planning the project during the proposal and interview process
2. Build up the project team, meaning the owner, design team, and other stakeholders; set the right project targets
3. Adapt to and enable the designers so they can be successful throughout schematic design and design development
4. Make the plan with the builders who will execute the project
5. Prepare to start strong by getting out ahead of the work

The Team

1. Building the Project Team: Appoint a strong multiplier leader, form the team around the 5 key behaviors, and set a challenging performance goal.
2. Balancing the Project Team: Protect the team from impacts and variation, and ensure you have the right people on the bus—and in the right seats.
3. Creating Individual Balance: Make sure each team member has clarity, Leader Standard Work, a To-Do List, and a personal organization system.

The Plan

1. Create a Production Plan: The team is using a Macro-level Strategic Takt Plan, hosting pull plans, using a Norm-level Production Plan, A 3-6 Week Look-ahead plan, a Weekly Work Plan, and a Day Plan to run work collaboratively in the field.
2. Lean in Contracts: The MSA & individual contracts have Lean inclusions in them to guide behaviors on the project
3. Risk Management: A fresh eyes meeting was held for the project. Risks were identified and placed on a register and the project plan was compared to a reference class.

The Supply Chain

1. Procurement: A procurement log or strategy is being used to proactively manage the supply chain.
2. Prefabrication: The project team knows what they want to pre-fabricate and design and construction is working to get it done
3. Logistics: A logistics plan is being used to drive the receipt, handling, and delivery of materials onsite.

The Culture

1. Win over the Workforce: The project workers are won over with amazing worker care systems, signage, onboarding, connection, and great restrooms and lunch areas
2. Orientation & Onboarding: Onboarding for worker is amazing and creates real connection
3. Clean, Safe, and Organized: The project is always beautifully clean, safe, and organized

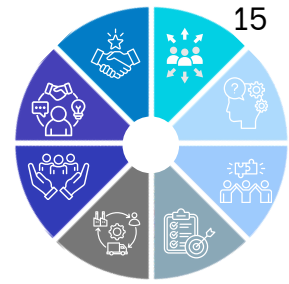
Training

1. Your team is trained on the operating system
2. Your team has individual role training
3. Your team has been to a Super/PM Boot Camp

Trade Partner Preparation Process

1. A buyout process is in place to capture the right scope
2. A Pre-mobilization Meeting is in place to share expectations
3. A Pre-construction Meeting is in place to orient the Foremen to the work and create a visual that can be used by the crew to install in the field
4. A First-in-place Inspection is scheduled to help get the crew off on the right foot
5. Follow-up inspections are happening in Zone Control walks to maintain quality and safety
6. A Final Inspection is held to finalize the work and close-out contractors before they de-mobilize from the site

First Planner System® Audit



Project Name: **Date:**

Auditor: **Total Score:**

EXTERNAL FACTORS — SECTION SCORE:

System Component	Score 1-5	Comments
The owner is supportive, enables you to do your job, respects people and wants to build in a lean way.		
Company leaders, all stakeholders, and other influencers will support you and build the Lean way.		
The goal of the project is finishing on time while respecting people.		
The structure of the project system enables you to build the Lean way.		
The rules setup in your contracts enable you to build the Lean way.		

PRE-CONSTRUCTION PLANNING — SECTION SCORE:

Begin planning the project during the proposal and interview process.		
Build up the project team, meaning the owner, design team, and other stakeholders; set the right project targets.		
Adapt to and enable the designers so they can be successful throughout schematic design and design development.		
Make the plan with the builders who will execute the project.		
Prepare to start strong by getting out ahead of the work.		

THE TEAM		SECTION SCORE:
Building the Project Team: Appoint a strong multiplier leader, form the team around the 5 key behaviors, and set a challenging performance goal.		
Balancing the Project Team: Protect the team from impacts and variation, and ensure you have the right people on the bus—and in the right seats.		
Creating Individual Balance: Make sure each team member has clarity, Leader Standard Work, a To-Do List, and a personal organization system.		

THE PLAN		SECTION SCORE:
Create a Production Plan: The team is using a Macro-level Strategic Takt Plan, hosting pull plans, using a Norm-level Production Plan, A 3-6 Week Look-ahead plan, a Weekly Work Plan, and a Day Plan to run work collaboratively in the field.		
Lean in Contracts: The MSA & individual contracts have Lean inclusions in them to guide behaviors on the project.		
Risk Management: A fresh eyes meeting was held for the project. Risks were identified and placed on a register and the project plan was compared to a reference class.		

THE SUPPLY CHAIN		SECTION SCORE:
Procurement: A procurement log or strategy is being used to proactively manage the supply chain.		
Prefabrication: The project team knows what they want to pre-fabricate and design and construction is working to get it done.		
Logistics: A logistics plan is being used to drive the receipt, handling, and delivery of materials onsite.		

THE CULTURE		SECTION SCORE:
Win over the Workforce: The project workers are won over with amazing worker care systems, signage, onboarding, connection, and great restrooms and lunch areas.		
Orientation & Onboarding: Onboarding for each worker is amazing and creates real connection.		
Clean, Safe, and Organized: The project is always beautifully clean, safe, and organized.		

TRAINING		SECTION SCORE:
Your team is trained on the operating system.		
Your team has individual role training.		
Your team has been to a Super/PM Boot Camp.		

TRADE PARTNER PREPARATION PROCESS		SECTION SCORE:
A buyout process is in place to capture the right scope.		
A Pre-mobilization Meeting is in place to share expectations.		
A Pre-construction Meeting is in place to orient the Foremen to the work and create a visual that can be used by the crew to install in the field.		
A First-in-place Inspection is scheduled to help get the crew off on the right foot.		
Follow-up inspections are happening in Zone Control walks to maintain quality and safety.		
A Final Inspection is held to finalize the work and close-out contractors before they de-mobilize from the site.		

REFLECTION- BUILDING A PROJECT TEAM

The purpose of this component in the First Planner System® is as the apparatus with which all other systems and components are delivered. The team will implement every other component of the system to the degree that the team is functioning. If your team enjoys coming to work, engages in healthy conflict and works together to create flow, you are meeting the critical needs of the team . An unhealthy team has diminished capability, capacity and inherent motivation. If the team is fragmented and not aligned in the right ways, tensions and siloing will take over and more time and effort will be required to produce value-add work.

COMPONENT SCORING: (1%-100%)

1. Is your team:
   a. taking time to know each other?___
   b. building trust?___
   c. engaging in healthy conflict?___
   d. making decisions and setting goals/standards together?___
   e. holding each other accountable?___
   f. a high performing group?___
2. Does your team have a strenuous performance goal that is pulling the team towards alignment, mutual trust, and accountability to the group?___
3. Have you been intentional about creating your team culture?___
4. Is your team focused on finding the real cause of problems in the system rather than blaming individuals?___
5. Do you have a multiplier leader that:
   a. builds the team?___
   b. has difficult conversations when and how they need to take place?___
   c. manages, coaches, mentors, and trains direct reports without micromanagement?___
   d. ensures remarkable meetings are taking place?___
   e. scales communication and clarity effectively about the vision and direction of the project?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- BALANCING A PROJECT TEAM

The purpose of this component in the First Planner System® is to ensure your team stays healthy throughout the duration of the project. Team building efforts will be overrun if you are not able to balance the changes your team will face as outside elements join your team. The project owner, owner's rep, designers, trades and even your own corporate policies have the potential to create an imbalance as you struggle to incorporate them and their demands into your own team dynamics. Once you and your team are over capacity, your project will begin to spiral. Simply put, the energy to control the project cannot be more than the combined team energy they have to offer. Your focus is to keep them balanced with high morale, at all costs.

COMPONENT SCORING: (1%-100%)

1. Are you shielding your project team from impacts that will cause imbalance?___
2. Are you reducing variation and creating flow within your project leadership team? ___
3. Does your team have all the right people on and off the bus?___
4. Does your team have all the right people in all the right seats on the bus?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- INDIVIDUAL BALANCE

The purpose of this component in the First Planner System® is to ensure each person on the team is able to live a balanced and happy life and blend his or her work and family in a way that they can experience a win-win. If this component is not in place the team will not have the time to implement anything else in the system.

COMPONENT SCORING: (1%-100%)

1. Does each person know about the fixed vs. growth mindset?___
2. Does each person on your team have a clarity document?___
3. Does each person have a personal organization system?___
4. Does each person have a morning routine that sets them up for the day?___
5. Are team members using to do lists?___
6. Does every member have Leader Standard Work?___
7. Are team members time blocking their days with buffers and focus?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- CREATE A PRODUCTION PLAN

The purpose of this component in the First Planner System® is to simulate what is possible with the resources we have and align it to what the the owners want and will accept. I have never seen a project go well without this kind of visual planning of the production system. It aligns all others processes, systems, and supply chains to a rhythm that the project leaders can see, follow, adjust, and win with. Without it you will be lost in a "wish list" CPM schedule that means nothing and negatively impacts everything.

COMPONENT SCORING: (1%-100%)

1. Do you have a Macro level Takt plan?___
2. Do you have an optimized Norm level Takt plan with the right no. of zones and the right Takt time?___
3. Are you pull planning every phase?___
4. Are you using 6-week Make-ready Look-ahead plans?___
5. Are you collaborating with Trades in making Weekly Work Plans?___
6. Are you doing day planning with trades?___
7. Do you understand the Takt Production System® well enough to implement it?___
8. Are you controlling and leveling WIP in a way that you can maintain flow?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- LEAN IN CONTRACTS

The purpose of this component in the First Planner System® is to properly onboard trades to project expectations, ensure they have the right scope to accommodate lean systems, and ultimately support your production system in the field with capable trade partners. If you do not have this your trades will be surprised, not be on board, and you will receive change orders for their trouble.

COMPONENT SCORING: (1%-100%)

1. Do you have a list of needs for contract inclusions?___
2. Has this list made its way into your Master Subcontract Agreement or inclusions in the contract or work order?___
3. Are you having collaborative sessions with trades throughout the buyout process to onboard them?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- RISK MANAGEMENT

The purpose of this component is to confirm your production plan and contracts include everything needed to prevent risks from happening, and that they are structured to cover them. If you fail in this stage, you'll have an unrealistic plan and trade contract. If you do this properly you and your trades will be able to help each other prevent these risks from ever happening.

COMPONENT SCORING: (1%-100%)

1. Did you hold a fresh eyes meeting for this project?___
2. Did you identify as many possible risks for this project as possible?___
3. Did you anchor to past projects?___
4. Have you adjusted (increase) the plan accordingly?___
5. Do you have a risk and opportunity register your team uses weekly to prevent risks? ___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE



REFLECTION- PROCUREMENT

The purpose of this component is to supply your production plan with materials, tools, equipment, and information. If you don't have a supply chain production system in place, you will struggle on site. With a good procurement system you will always have what you need. Without it, you can expect to wait on materials and therefore experience stops, restarts, delays, and an overburdened project. Never leave this component of construction to your trades. It is YOUR job to manage procurement on the project with them.

COMPONENT SCORING: (1%-100%)

1. Do you have a procurement system on your project?___
2. Do you have a way to track procurement on a log, software, or visual?___
3. Are you recovering delays in the supply chain proactively as you notice problems real-time?___
4. Have you designed the use of lay down and staging yards with any associated material inventory buffers?___
5. Are you effectively meeting with your team to manage procurement?___
6. Are you using buffers in your procurement efforts?___
7. Are you bringing materials out JIT?___
8. Are you focused on information and materials in your efforts?___
9. Have you leveraged Virtual Design & Construction in your efforts?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- PRE-FABRICATION

The purpose of this component is to supply your production plan with materials, tools, equipment, and information in pre-assembled ways and better enable the flow of construction. If you do not have pre-fabrication on the project you will be forced to stick build everything, will be victim to install bottlenecks, and the site will be riddled with waste and impacts.

Pre-fab should go from an afterthought to a major consideration in construction.

COMPONENT SCORING: (1%-100%)

1. Have you planned what you want to pre-fabricate?___
2. Have you engaged the design team early enough to design to what you will be pre-fabricated?___
3. Do you have a good pre-fab plan with your trades that has been coordinated?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- LOGISTICS

The purpose of this component is to make sure you receive your procured materials and equipment and get it to the place of install in the right way. Sometimes projects get the materials, fail to inspect them upon arrival, and let them end up anywhere onsite where they get moved, damaged, and put in the way of someone else. It's chaos and will kill your project. If you receive them, inspect them, and move them in an orderly fashion with your operators, you'll set yourself up for massive success.

*Remember, your logistics plans are just as important as your production plan. If you can get workers and materials to the place of work, you can build it.

COMPONENT SCORING: (1%-100%)

1. Are you utilizing a site logistics plan that everyone can access?___
2. Are you utilizing all 6 types of maps?___
3. Are deliveries all scheduled?___
4. Are staging locations coordinated daily in Foremen Huddles and distributed to the entire project team?___
5. Are you using your operators as guardians of logistical stability?___
6. Are you inspecting materials when they arrive?___
7. Are you enforcing the rule that things only go where coordinated in the Foreman Huddle?___
8. Are your staging yards beautifully organized?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- WIN OVER THE WORKFORCE

The purpose of this component of winning over the workforce is to ensure the workers and Foremen are committed to doing a good job for the team. Again, we cannot piss off the workforce and still build a successful project. The way we win over the workforce will directly affect quality, safety, morale, and engagement among the wider team.

Without this component the people on the project may vandalize the site, do poor work, leave the areas dirty, perform below production targets, or engage in unsafe practices. One key indicator of this is graffiti in the bathrooms. It's an indication that the workforce on the project is disgruntled. Feeling disgruntled or resentful means the crews won't act as a united team. Guardedness and siloing will take over at all levels and the project will spend more time fighting and being defensive than producing actual value-add work.

COMPONENT SCORING: (1%-100%)

1. Do project leaders fundamentally respect people?___
2. Are bathrooms remarkably clean with hand wash stations and trash cans?___
3. Are lunch areas provided in good enough condition to win over the craft?___
4. Are the workers and foremen so connected to project leaders in the huddles that they collectively want to do a good job for the team?___
5. Are site conditions clean, safe, and organized to levels of near perfection?___
6. Are celebrations held at least quarterly to celebrate the skilled craft onsite?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- ORIENTATION AND ONBOARDING

The purpose of this component is to remarkably orient the workers to your lean systems. When workers arrive on site, we have an opportunity to make an impression, connect, and set the relationship off on the right foot. If we have this in place, then the workers will be engaged with total participation and the entire site can work toward rowing in the same direction as allies.

If you do not have this piece, you will have an entire workforce that feels disconnected, will likely struggle or fail right out of the gate, and you may not ever get the chance to fix your first impression. You will have the system, but not the people's hearts and minds in the system. It will be harder to keep the site clean, maintain operational control, and maintain Takt control within zones.

COMPONENT SCORING: (1%-100%)

1. Do you have good directions to and signage at the parking lot?___
2. Is there great signage and human support systems on the way to the orientation location?___
3. Is there a person, process, or visual environment that will warmly welcome the worker?___
4. Do you have an interesting and engaging orientation with personal connection?___
5. Do you take the workers on a brief tour of the jobsite, orient them, and help them get to their crews?___
6. Have you provided a visual indicator of the orientation and ensured they understand the content in a language they understand?___
7. Are you onboarding them daily in the morning worker huddle?___
8. Do you provide lean training for your foremen?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- CLEAN, SAFE, AND ORGANIZED

The purpose of this component is to provide operational stability that will enable all other success. Cleanliness and safety are not only good ideas, they are required in order to make any further progress. Your flow, problem solving, the morale of your project, and the flow of materials all depend on cleanliness, safety, and organization. If you do not have this piece, you will have chaos that will slow down production, clutter the minds of people onsite, and prohibit you from seeing what you need to see. No other lean system can be implemented successfully without this component coming first.

COMPONENT SCORING: (1%-100%)

1. Is your project clean?___
2. Is your project safe?___
3. Is your project organized?___
4. Do you have a 6S system in place that people will remember and use?___
5. Does your workforce know the 9 wastes and have reminder cards?___
6. Do you have a zero tolerance system for cleanliness and organization?___
7. Do you have a zero tolerance system for safety?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION-TRAINING

Without training on these systems as a team you run the risk of reverting back to old habits. The key here is to help people to know what is expected, motivate them to do it, and clear the path for them. Training will cover the first two.

COMPONENT SCORING: (1%-100%)

1. Has your team been trained on the Takt Production System®?___
2. Have your Supers and Foremen read the Art Of The Builder book for their role?___
3. Have they attended their role's boot camp?___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

REFLECTION- TRADE PARTNER PREPARATION PROCESS

The purpose of this part of the system is to select the right Trade, orient them, set them up for success, and then ensure patterns are being followed. If you do not have this you will install defective work and be riddled with rework and delays. The trade will not be ready and you will be stuck fighting fires.

COMPONENT SCORING: (1%-100%)

1. Do you have a remarkable buyout process that is followed?___
2. Do you have a way to communicate expectations to Trades before they mobilize? ___
3. Are you holding a pre-construction meeting that is effective? ___
4. Are you distilling all needed information into a checklist or visual for the crews to use while installing? ___
5. Are you inspecting the first piece of work to make sure the Trade is off to a good start? ___
6. Are you facilitating follow-up inspections and final inspections to keep the quality going? ___

What is your final score, taking the average of all answers? ___
If your score is below 80%, what specific actions do you need to take to elevate your team and leadership?

NOTE

03 TAKT PRODUCTION SYSTEM®



Takt Planning



Programs and Projects

1. Program levels identified
2. Functional areas identified and teams separated
3. Program Master Schedule on-line for core team

Milestones

1. Start milestone set
2. Substantial Completion milestone set
3. Final Completion milestone set
4. Financial Completion milestone set

Phases

1. Phases are identified by functional area
2. All phases for project identified

Zones

1. Physical Constraints identified
2. Macro zones identified
3. Norm and backup zones identified
4. Work Density done by the Norm
5. Identify types of flow: work, logistical, trade
6. Identify Workable Backlog
7. Macro and Norm strategy is clear from calculator
8. Buffers gained

Takt Time

1. Start with 5-day for Macro
2. Go to shorter Takt times
3. Decide on Takt-time based or resourced based Takt planning
4. Do not use the weekends for the Takt time
5. Always have a macro, norm, and backup Takt time

Trains & Trade Flow

1. Start with reliable production data
2. Decide on single or multi-train packaging
3. Work Package for flow
4. Obey the rules of flow
5. Always pull plan for the Norm

Production Laws

1. Understand the Production Laws
2. Always be open to smaller zones
3. Level work
4. Reduce variation
5. Always know your bottlenecks
6. Always know your in-zone cycle time
7. Never add labor, work overtime, rush, push, panic, overstock, or stack or burden as a knee-jerk reaction

Buffers

1. Always plan with buffers
2. Always have 5-20% buffers in a sequence
3. Always have enough phase or project buffers to cover risks
4. Track your remaining buffer ratio throughout
5. Utilize supply chain and material inventory buffers
6. No sandbagging
7. Know constraints and roadblocks
8. Know recovery options

Interconnections

1. Always show key connections between phases.
2. Understand how interdependence ties affect the Path of Critical Flow

Independent Activities

1. Know your independent activities
2. Tie these activities to trains in phases
3. Understand the effect of these in the Path of Critical Flow
4. Consider these for optimization, pre-fab, or designing to the work package

Path of Critical Flow

1. Always know the Path of Critical Flow
2. Know the difference between a PCF and a critical path
3. Understand the ways to strategically optimize and project
4. Always know your Path of Critical Flow for different realized flow potential options

First Planner + Last Planner® Coordination

1. Prepare the production plan to produce the Look-ahead and Weekly Work Plan
2. Use First Planners to get the strategic plan, environment, and resources to the Last Planners® on time

Takt Planning-A TPS® Audit



Project Name: **Date:**

Auditor: **Total Score:**

PROGRAMS AND PROJECTS SECTION SCORE:

System Component	Score 1-5	Comments
Program levels have been identified.		
Functional areas are identified and teams are separated.		
Program Master Schedule is on-line for the core team.		

MILESTONES SECTION SCORE:

Start milestone is set.		
Substantial Completion milestone is set.		
Final Completion milestone is set.		
Financial Completion milestone is set.		

PHASES SECTION SCORE:

Phases are identified by functional area.		
All phases for project identified		

ZONES SECTION SCORE:

Physical Constraints are identified.		
Macro zones are identified.		
Norm and backup zones are identified.		
Work Density done by the Norm stage.		
Identify types of flow: work, logistical, trade.		
Identify Workable Backlog.		
Macro and Norm strategy is clear from calculator.		
Buffers have been gained.		

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TAKT TIME		SECTION SCORE:
Start with 5-days for the Macro.		
Go to shorter Takt times; use the calculator.		
Decide on Takt-time based or resourced based Takt planning.		
Do not use the weekends for the Takt time-ever!		
Always have a macro, norm, and backup Takt time; use the calculator to find strategies.		

TRAINS & TRADE FLOW		SECTION SCORE:
Start with reliable production data.		
Decide on single or multi-train packaging.		
Work Package for flow.		
Obey the rules of flow.		
Always pull plan for the Norm!		

PRODUCTION LAWS		SECTION SCORE:
Understand the Production Laws and how they apply.		
Always be open to smaller zones.		
Level the work.		
Always know your bottlenecks.		
Always know your in-zone cycle time		
Never add labor, work overtime, rush, push, panic, overstock, or stack or burden as a knee-jerk reaction.		

BUFFERS		SECTION SCORE:
Always plan with buffers.		
Always have 5-20% buffers in a sequence.		
Always have enough phase or project buffers to cover risks.		
Track your remaining buffer ratio throughout.		

Utilize supply chain and material inventory buffers.		
No sandbagging.		
Know the constraints and roadblocks.		
Understand your recovery options.		

INTERCONNECTIONS		SECTION SCORE:
Always show key connections between phases.		
Understand how interdependence ties affect the Path of Critical Flow		

INDEPENDENT ACTIVITIES		SECTION SCORE:
Know your independent activities.		
Tie these activities to trains in phases.		
Understand the effect of these in the Path of Critical Flow.		
Consider these for optimization, pre-fab, or designing to the work package.		

PATH OF CRITICAL FLOW		SECTION SCORE:
Always know the Path of Critical Flow.		
Know the difference between a PCF and a critical path.		
Understand the ways to strategically optimize and project.		
Always know your Path of Critical Flow for different realized flow potential options.		

FIRST PLANNER + LAST PLANNER® COORDINATION		SECTION SCORE:
Prepare the production plan to produce the Look-ahead and Weekly Work Plan.		
Use First Planners to get the strategic plan, environment, and resources to the Last Planners® on time.		

Takt Steering & Control



Constraints

1. Understand Resource, Zone, WIP, and Behavioral Constraints
2. Post the Constraint Problem Solving poster on the conference wall
3. Remove overburden from people and resources onsite
4. Do not overreact to schedule impacts by adding excess labor
5. Do not overreact to schedule impacts by bringing out too many materials to the place of work
6. Align WIP to the capacity of resources
7. Never rush, push, and panic
8. Always follow Goldratt's Rules of Flow
9. Build the job right from the start and you won't have to worry about a court case

Roadblocks

1. Understand Zone and Supply Roadblocks
2. Post the Roadblock Problem Solving boards on the conference room wall

Meeting System

1. Create your flow of meetings on a cadence
2. Implement a Team Weekly Tactical where you create team coverage and tackle hot items
3. Implement a Strategic Planning and Procurement Meeting where you view the Macro and manage Procurement
4. Always level the work in your procurement log
5. Implement the Trade Partner Weekly Tactical where you do look-ahead planning and create your weekly work plan
6. Implement a daily Afternoon Foremen Huddle to plan work for the next day
7. Host a daily Morning Worker Huddle to create one social group and create a culture of operational excellence
8. Post your Takt Steering & Control boards on your conference room wall with visuals & red roadblocks
9. Encourage Crew Preparation Huddles for crews to see the plan in their zone and make improvements in one progress flow

Zone Control

1. Coordinate zone control handoff walks in the Afternoon
2. Foremen Huddle the day before
3. Use the WWP and Day Play to walk key handoffs for the day. Split them between which ones the project delivery team will monitor vs. trade monitored handoffs
4. Bring all information to that day's Afternoon Foremen Huddle for discussion. Mark roadblocks on Takt Steering and Control boards

Delay Management

1. Bring massive issues from Zone Control walks to the Team Daily Huddle
2. Identify in the Team Daily Huddle and Afternoon Foremen Huddle the root cause of the issue
3. Utilize the Problem Solving boards on the wall to make a plan of action
4. Never sacrifice the flow of the project. Make correction according to production science

Accountability

1. Implement zero tolerance systems onsite for cleanliness, safety, and organization
2. Implement a Daily Correction System
3. Enforce Quality at the Source
4. Start Contractor Grading systems
5. Begin scoring your Team Health Score monthly

*These are a part of the overall IPCS™.

KPIs

1. Begin tracking the percentage of Pre-Con Meetings held and percentage of Critical Crews Installing with a Visual Checklist
2. Track your Remaining Buffer Ratio
3. Track your Perfect Handoff Percentage
4. Track your Percent Planned Complete
5. Track your Roadblock Removal Average

Quality and Continuous Improvement

1. Use the Takt framework for Kaizen at the project and crew level
2. Implement the Trade Partner Preparation (TP3) to get quality and safety right from the start

Takt Steering & Control- A TPS® Audit



Project Name: **Date:**

Auditor: **Total Score:**

CONSTRAINTS SECTION SCORE:

System Component	Score 1-5	Comments
Understand Resource, Zone, WIP, and Behavioral Constraints.		
Post the Constraint Problem Solving poster on the conference wall.		
Remove overburden from people and resources onsite.		
Do not overreact to schedule impacts by adding excess labor.		
Do not overreact to schedule impacts by bringing out too many materials to the place of work.		
Align WIP to the capacity of resources.		
Never rush, push, and panic.		
Always follow Goldratt's Rules of Flow.		
Build the job right from the start and you won't have to worry about a court case		

ROADBLOCKS SECTION SCORE:

Understand Zone and Supply Roadblocks, and the difference between them.		
Post the Roadblock Problem Solving boards on the conference room wall.		

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MEETING SYSTEM — SECTION SCORE:

Create your flow of meetings on a cadence.		
Implement a Team Weekly Tactical where you create team coverage and tackle hot items.		
Implement a Strategic Planning and Procurement Meeting where you view the Macro and manage procurement.		
Always level the work in your procurement log.		
Implement the Trade Partner Weekly Tactical where you do look-ahead planning and create your weekly work plan.		
Implement a daily Afternoon Foremen Huddle to plan work for the next day. It must be in the afternoon.		
Host a daily Morning Worker Huddle to create one social group and create a culture of operational excellence.		
Post your Takt Steering & Control boards on your conference room wall with visuals and red roadblocks.		
Encourage Crew Preparation Huddles for crews to see the plan in their zone and make improvements in one progress flow.		

ZONE CONTROL — SECTION SCORE:

Coordinate zone control handoff walks in the afternoon; quality is measured at each handoff.		
Foremen Huddle the day before.		
Use the WWP and Day Play to walk key handoffs for the day. Split them between which ones the project delivery team will monitor vs. trade monitored handoffs.		
Bring all information to that day's Afternoon Foremen Huddle for discussion. Mark roadblocks on Takt Steering and Control boards		

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DELAY MANAGEMENT		SECTION SCORE:
Bring large issues from Zone Control walks to the Team Daily Huddle.		
Identify in the Team Daily Huddle and Afternoon Foremen Huddle the root cause of the issue.		
Utilize the Problem Solving boards on the wall to make a plan of action.		
Never sacrifice the flow of the project. Make corrections according to production science.		

ACCOUNTABILITY		SECTION SCORE:
Implement zero tolerance systems onsite for cleanliness, safety, and organization.		
Implement a Daily Correction System.		
Enforce Quality at the Source.		
Start Contractor Grading systems.		
Begin scoring your Team Health Score monthly. *This is part of the overall IPCS™		

KPIS		SECTION SCORE:
Begin tracking the percentage of Pre-Con Meetings held and percentage of Critical Crews installing with a Visual Checklist.		
Track your Remaining Buffer Ratio.		
Track your Perfect Handoff Percentage.		
Track your Percent Planned Complete.		
Track your Roadblock Removal Average.		

QUALITY AND CONTINUOUS IMPROVEMENT		SECTION SCORE:
Use the Takt framework for Kaizen at the project and crew level.		
Implement the Trade Partner Preparation (TP3) to get quality and safety right from the start.		

A BUILDER'S TAKE ON THE

Last Planner® System



Deliverables

1. Macro Strategic Takt Plan sets accurate milestones
2. Pull Plan sets the right sequence
3. Norm Level Production Plan drives production and gains buffers
4. Make-ready Look-ahead Plans find roadblocks and help make work ready
5. Weekly Work Plan supports Last Planners® in making hand-off commitments
6. Day Plan communicates the plan to all workers
7. Percent Planned Complete allows the team to RCA problems

Meetings

1. Strategic Planning and Procurement Meeting for strategic planning and supply chain tracking
2. Trade Partner Weekly Tactical to perform Look-Ahead and Weekly Work Planning
3. Daily Afternoon Foremen Huddle to plan the next day
4. Morning Worker Huddle where plan is communicated to workers
5. Zone Control Walks where handoffs are managed
6. Team Daily Huddle for removing roadblocks for trades

Behaviors

1. Respect is strong for workers and Foremen
2. Collaboration is happening with all field leaders
3. Commitments are made by Last Planners®
4. Visual Systems enable the team

Tools

1. First-run Studies are used to prepare work
2. Workable Backlog means areas are carved out for swing capacity
3. Sidebars used when a topic is not needed in front of the group
4. Connection & Communication 1:1 where Foremen work directly together

Rules

1. Never pair CPM with Last Planner®, always pair with Takt
2. Pull plans must be done by zone and zones must be the right optimized size
3. Pull plans become Norm-level Takt plans with gained buffers
4. Look-ahead plans are to be filtered from the production plan and reflect the Trade flow
5. Weekly Work Plans are filtered from the production plan and adjusted by Trades as needed
6. Foreman Huddles happen the day beforehand and enable the work to start first thing the next morning
7. Worker huddles must be in place to get the information all the way to installation

Best Practices

1. Shielding & Screening
2. Advanced Root-cause Analysis
3. Continuous Improvement

Dos and Don'ts

1. Do not pair LPS® with CPM
2. Foremen must commit willingly
3. Don't Confuse Constraints with Roadblocks
4. Work structuring should be Zone based
5. Don't run huddles in the morning for Foremen
6. Don't reinvent WWPs from scratch
7. Don't batch work
8. Don't stop meetings if you are not done
9. Don't use PPC alone

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Last Planner® System Audit

This audit is not affiliated with the Lean Construction Institute



Project Name: **Date:**

Auditor: **Total Score:**

DELIVERABLES SECTION SCORE:

System Component	Score 1-5	Comments
Macro Strategic Takt Plan sets accurate milestones.		
Pull Plan sets the right sequence		
Program Master Schedule is on-line for the core team.		
Norm Level Production Plan drives production and gains buffers.		
Make-ready Look-ahead Plans find roadblocks and help make work ready.		
Weekly Work Plan supports Last Planners® in making hand-off commitments.		
Day Plan communicates the plan to all workers.		
Percent Planned Complete allows the team to RCA problems.		

MEETINGS SECTION SCORE:

The Strategic Planning and Procurement Meeting for strategic planning and supply chain tracking is happening every week.		
The Trade Partner Weekly Tactical is used every week to perform Look-Ahead and Weekly Work Planning.		
Daily Afternoon Foremen Huddle are taking place each afternoon to plan the next day.		
Morning Worker Huddles take place every morning, where the plan is communicated to all workers.		
Daily Zone Control Walks help manage quality and handoffs.		

Team Daily Huddles are used for removing roadblocks for trades.		

BEHAVIORS		SECTION SCORE:
Respect is strong for workers and Foremen.		
Collaboration is happening with all field leaders.		
Commitments are made by Last Planners®.		
Visual Systems enable the team.		

TOOLS		SECTION SCORE:
First-run Studies are used to prepare work		
Workable Backlog means areas are carved out for swing capacity.		
Sidebars are used when a topic is not needed in front of the entire group.		
Connection & Communication 1:1, where Foremen work directly together.		

RULES		SECTION SCORE:
Never pair CPM with Last Planner®; always pair with production planning and Takt.		
Pull plans must be done by zone and zones must be the right optimized size.		
Pull plans become Norm-level Takt plans with gained buffers.		
Look-ahead plans are to be filtered from the production plan and reflect the Trade flow.		
Weekly Work Plans are filtered from the production plan and adjusted by Trades as needed.		
Foreman Huddles happen the day beforehand and enable the work to start first thing the next morning.		
Worker huddles must be in place to get the information all the way to installation.		

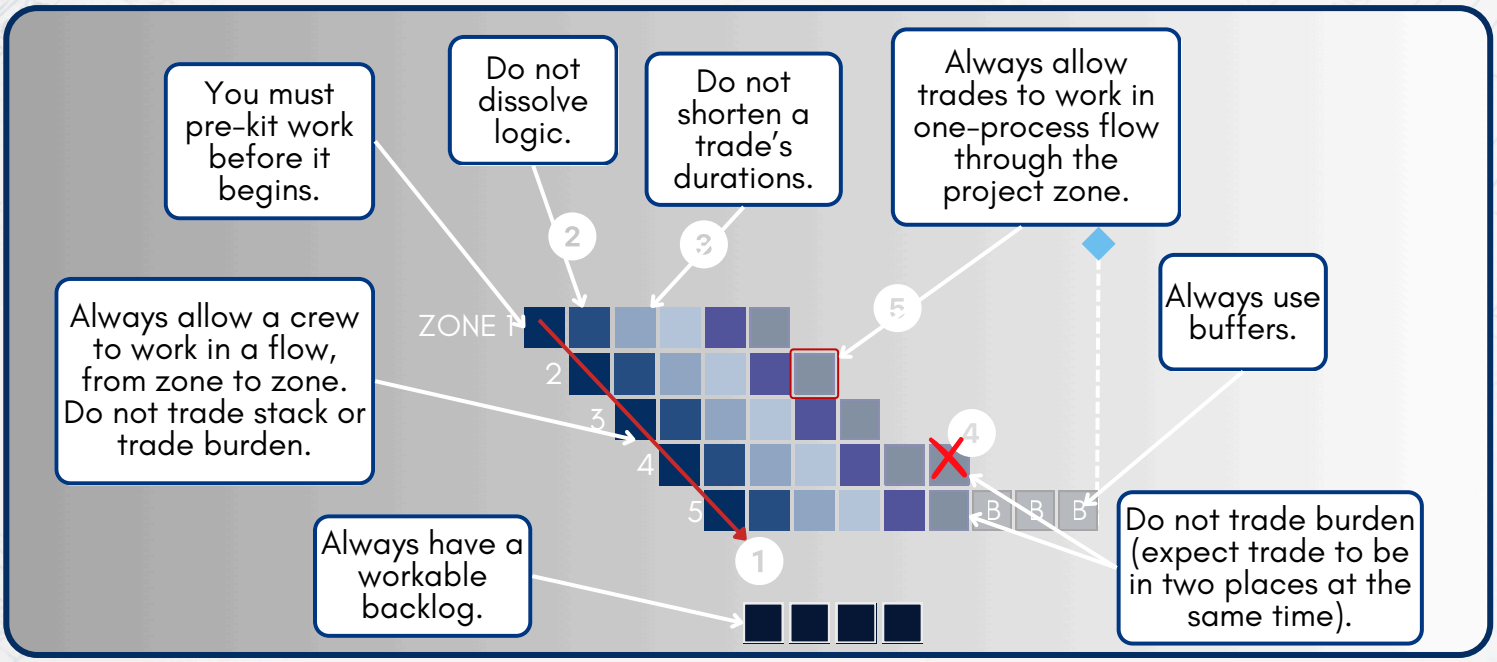
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BEST PRACTICES		SECTION SCORE:
Shielding & Screening		
Advanced Root-cause Analysis		
Continuous Improvement		

DOS AND DON'TS		SECTION SCORE:
Do not pair LPS® with CPM.		
Foremen must commit willingly.		
Don't Confuse Constraints with Roadblocks		
Work structuring should be Zone based.		
Don't run huddles in the morning for Foremen.		
Don't reinvent WWPs from scratch		
Don't batch work.		
Don't stop meetings if you are not done.		
Don't use PPC alone.		

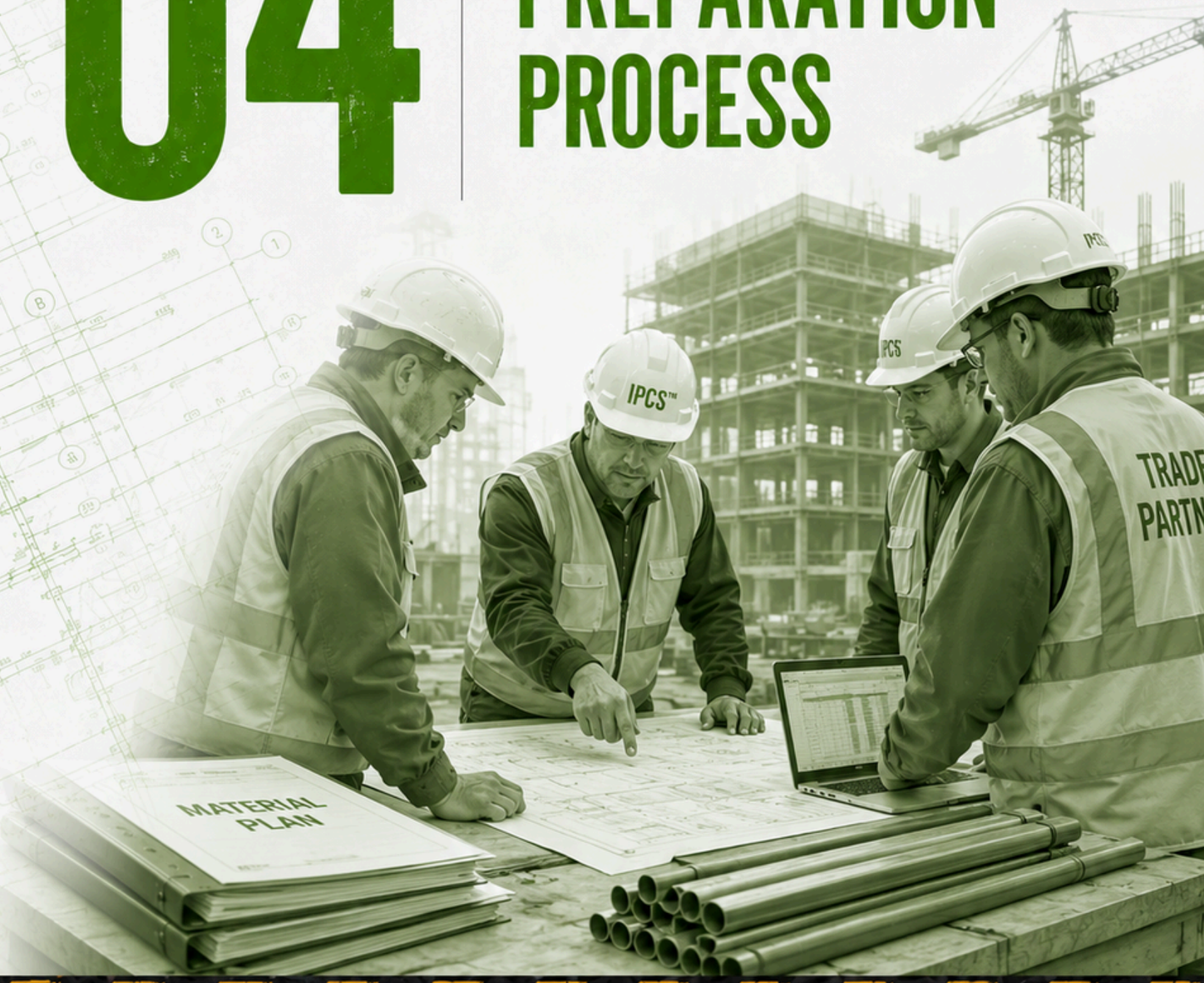
TAKT RULES OF FLOW

— PRODUCTION PLANNING —

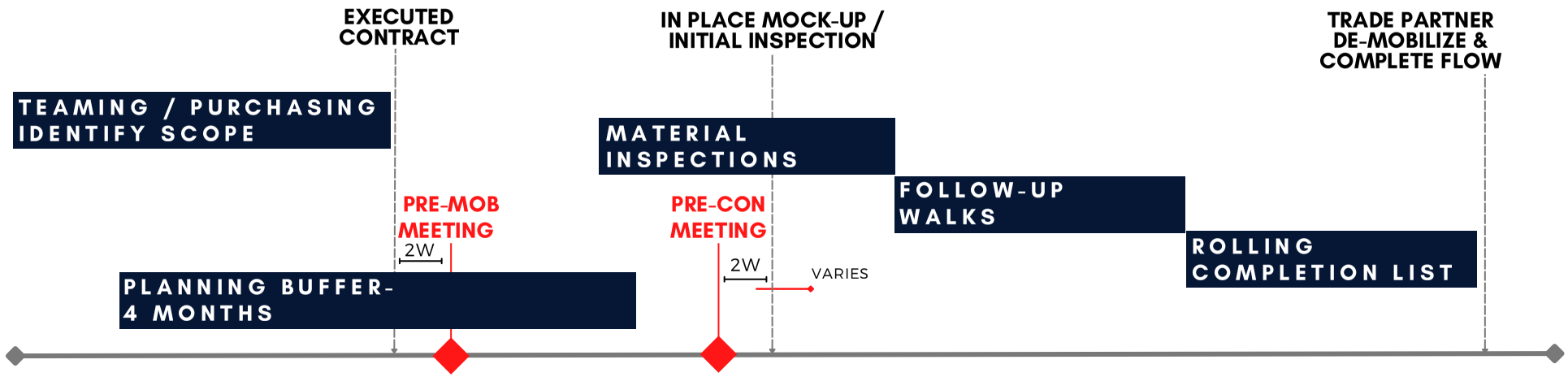


1. Always maintain diagonal trade flow in a time by location format.
2. Do not irresponsibly dissolve logic ties—use real data and adjust ties.
3. Do not shorten durations without permission. Enable a shorter in zone cycle time with advanced design, pre-fabrication, delivery, logistics, and preparation.
4. Do not trade stack or burden.
5. Always work in One Process Flow [OPF].
6. Always pre-kit work—don't start work unless it can be finished.
7. Always use buffers in the production plan.
8. Always have workable backlog for swing capacity.
9. Never fix and freeze your plan to align with a baseline.
10. Always analyze the Path of Critical Flow, not a critical path. A Path of Critical Flow will always have the activity, duration, logic tie, sequence, line of balance and a buffer.
11. Always attempt to work the trades in a train going the same speed and appropriate distance apart.
12. Flow by fixing problems—don't push trades to work faster.
13. Always align Work In Progress [WIP] to capacity.

04 TRADE PARTNER PREPARATION PROCESS



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PLAN IT FIRST!

STEP ONE- TEAMING

VERIFY CONTRACTOR SCOPE: ENSURE THE CONTRACTOR IS LEGALLY OBLIGATED TO PERFORM

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- OBTAIN COMMITMENTS TO COMPLY WITH:
  - PROJECT-SPECIFIC PLANS (SAFETY / QC / MAT)
  - SCHEDULE
  - PROJECT-SPECIFIC REQUIREMENTS
- REVIEW PROCUREMENT LOG
- IDENTIFY NEED FOR MOCK-UPS
- SCHEDULE ALL OTHER MEETINGS
- REVIEW PERMITTING
- VERIFY TESTING & INSPECTIONS
- UPDATE BUYOUT LOGS

STEP TWO- PRE-MOBILIZATION MEETING

EXPLAIN TO CONTRACTOR DELIVERABLE NEEDS; COMMIT CONTRACTOR TO DELIVER BY PRE-MOBILIZATION MEETING

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- CONFIRM COMMITMENTS:
  - PROJECT-SPECIFIC PLANS (SAFETY / QC / MAT)
  - SCHEDULE
  - FOW PROJECT-SPECIFIC REQUIREMENTS
- DEVELOP FOW BREAKOUT FOR CONTRACTOR
- DEFINE PROJECT OFFICE / ADMIN REQUIREMENTS
- GET BUY-IN FOR SCOPE OF SUBMITTALS AND COMMIT TO SCHEDULE
- FOLLOW-UP ON PERMITTING ACTION ITEMS
- IDENTIFY SPECIAL / SOURCE INSPECTIONS

STEP THREE- PRE-MOBILIZATION EMAIL

DOCUMENTATION

EMAIL MUST CONTAIN:

- CORRESPONDENCE
- SITE LOGISTICS PLAN
- SCHEDULE
- OWNER'S FOCUSES
- ON-BOARDING DOCUMENT WITH PARKING
- LIST OF NEEDED DELIVERABLES

BUILD IT RIGHT!

STEP ONE- PRE-CONSTRUCTION MEETING

COLLECT AND EXPLAIN DELIVERABLES; ENABLE THE FOREMAN AND SUPERINTENDENT

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- COLLECT AND REVIEW PRE-MOBILIZATION DELIVERABLES
- SET SAFETY AND QUALITY EXPECTATIONS
- SET-UP THE INITIAL INSPECTION
- COORDINATE WITH ALL APPLICABLE TRADES
- REVIEW SCHEDULE FOR WORK
- COMPLETE TESTING EXPECTATIONS
- REVIEW CURRENT PROJECT PLANS
- FOLLOW-UP ON SOURCE/SPECIAL INSPECTIONS
- FINISH INSPECTIONS REQUIREMENTS
- REVIEW ALL DRAWINGS
- REVIEW ALL SPECIFICATIONS
- REVIEW SITE LOGISTICS
- REVIEW PRECON SAFETY QUALITY FORM
- DETAIL A COMPLETE PLAN FOR ALL WORK

STEP TWO- INITIAL INSPECTION

GET THE CREWS OFF ON THE RIGHT FOOT; SET THE EXPECTATION

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- REVIEW SUBMITTALS
- REVIEW INSTALLATION
- CONFIRM CREW KNOWLEDGE
- CONGRATULATE OR CORRECT THE TEAM
- EDUCATE, EDUCATE, EDUCATE
- ARE THE CHECKLISTS BEING USED?
- SUBSTRATE ACCEPTED?
- SPEC AND DRAWINGS BEING REVIEWED?

FINISH AS YOU GO!

STEP ONE- FOLLOW-UP WALKS

KEEP AN EYE ON THE WORK; CHECK REQUIREMENTS DAILY

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- USE IPAD TO INSPECT WORK
- CHECK SOMETHING DAILY
- DO WE HAVE THE SAME FOREMEN?
- ARE THE CREWS UP-TO-DATE?
- ARE THE CORRECT MATERIALS BEING USED?
- EDUCATE, EDUCATE, EDUCATE

STEP TWO- ROLLING COMPLETION LIST

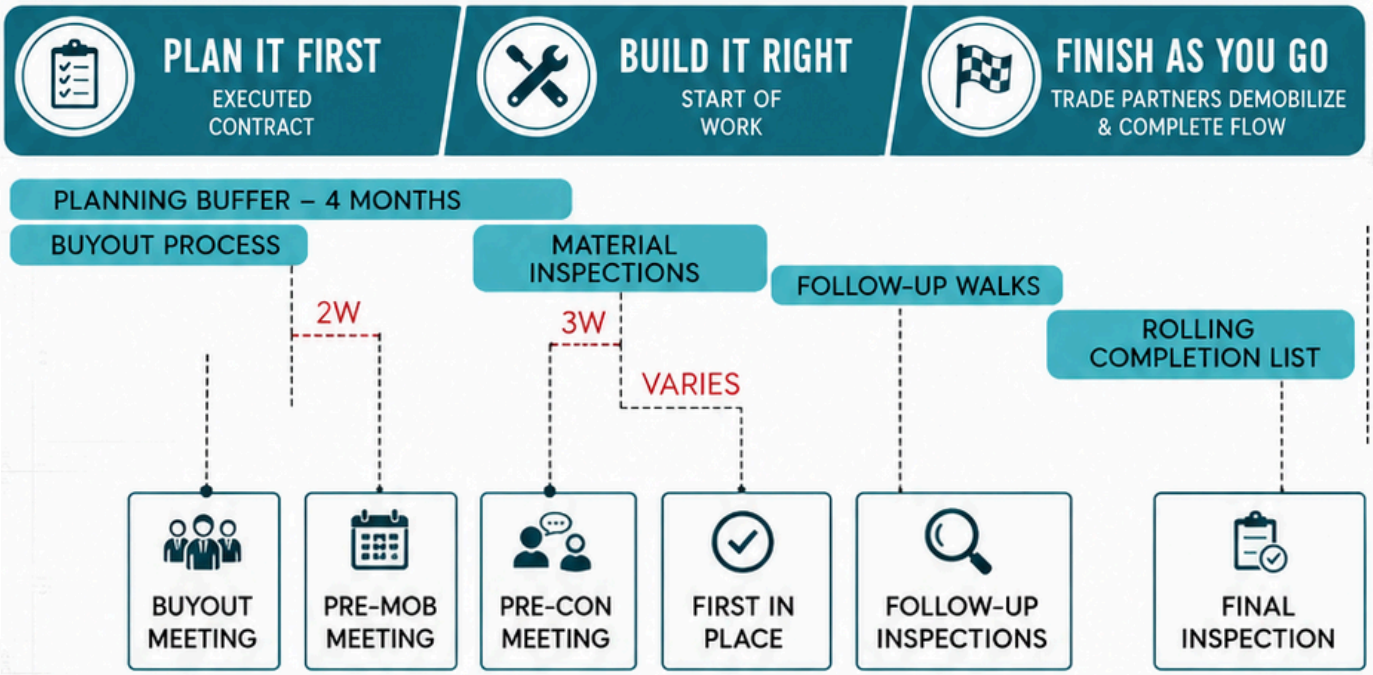
FINISH THE CONTRACTOR'S SCOPE BEFORE THEY LEAVE

- REVIEW OWNER'S TOP 10
- REVIEW CHECKLIST
- PERFORM A FINAL INSPECTION
- LOG ALL ITEMS ON ROLLING COMPLETION LIST

IPCS INTEGRATED PROJECT CONTROL SYSTEM

TRADE PARTNER PREPARATION PROCESS

OVERVIEW



BUYOUT MEETING The buyout meeting happens according to your buyout log.

PRE-MOB MEETING The pre-mob should be within 2 weeks of having an executed contract.

PRE-CON MEETING The pre-con meeting happens 3 weeks before the work begins, which leaves you some buffer if you need to re-schedule or have a follow-up.

FIRST IN PLACE Your first in place happens once the first work package is ready to inspect.

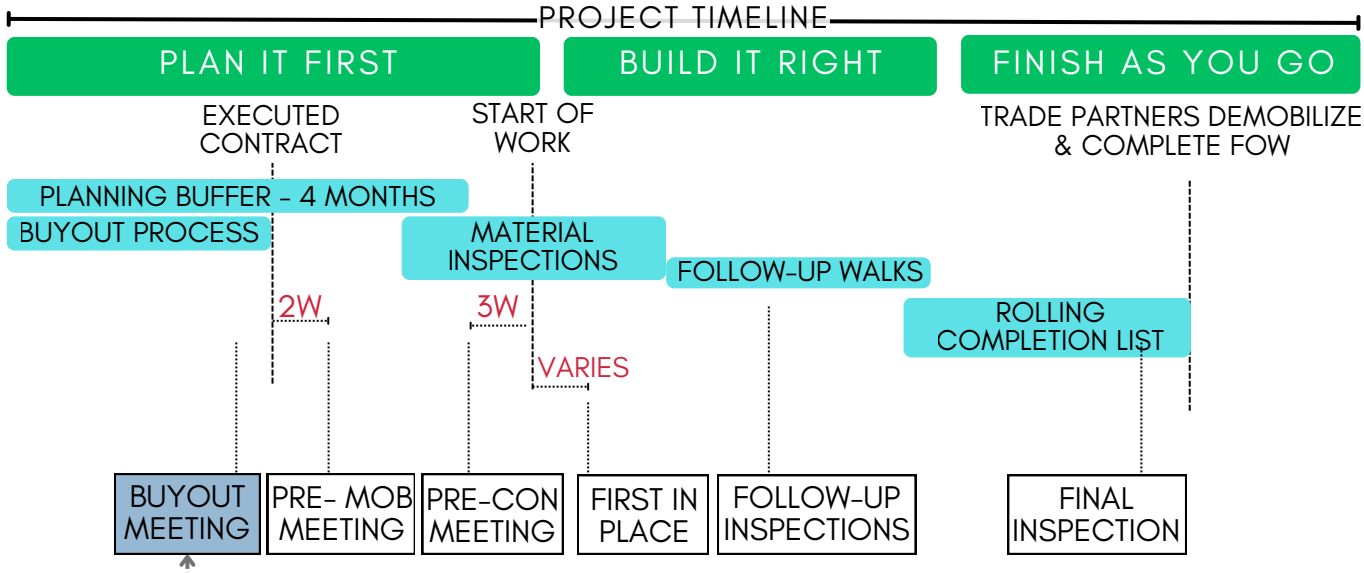
FOLLOW-UP INSTRUCTIONS Follow-ip inspections happen in zone control walks or when the crew encounters newer work or the Foreman changes.

FINAL INSPECTION The final should happen in enough time to finalze any punch-list and reconcile any change orders. DO NOT WAIT until trades leave the site and have to be brought back.

PREPARE EARLY.
INSPECT OFTEN.
FINISH CLEAN.

BUYOUT MEETING

1 Who attends? Trade representative & GC PM



2 Details

AGENDA ITEMS:

- Review Owner's Top 10
- Review work package checklist
- Obtain commitments to comply with:
  - Project-specific plans (Safety / QC)
  - Schedule
  - Project-specific requirements
- Review Procurement log
- Identify need for mock-ups
- Schedule all other meetings
- Review permitting
- Verify testing & inspections
- Update buyout logs

A First Planner® Meeting

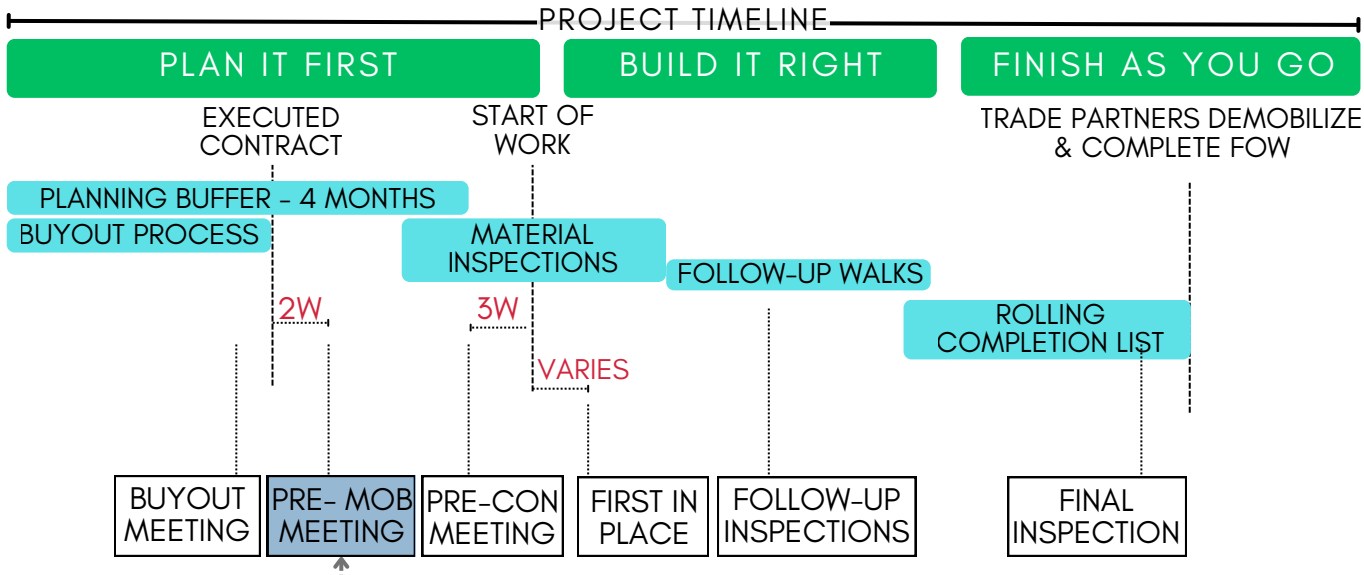
BUYOUT MEETING

AS NEEDED

Purpose: Verify contractor scope; ensure the contractor is legally obligated to perform

PRE-MOBILIZATION MEETING

1 Who attends? Trade PM & GC PM



2 Details

AGENDA ITEMS:

- Review Owner's Top 10
- Review work package checklist
- Confirm commitments:
  - Project-specific plans (Safety / QC)
  - Schedule
  - FOW Project-specific requirements
- Develop Feature of Work breakout for contractor
- Define project office/admin requirements
- Get buy-in for scope of submittals and commit to schedule
- Follow-up on permitting action items
- Identify special / source inspections

A First Planner® Meeting

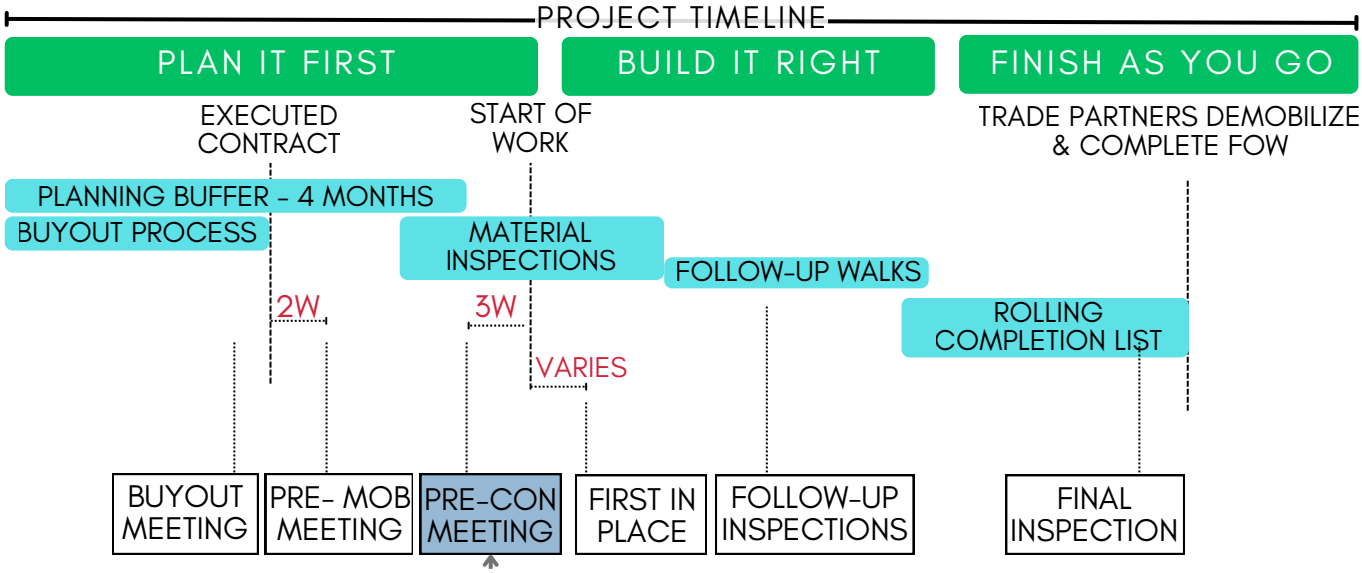
PRE-MOBILIZATION MEETING

2 WEEKS AFTER CONTRACT

Purpose: Explain to contractor deliverable needs. Commit contractor to deliver by pre-construction meeting

PRE-CONSTRUCTION MEETING

1 Who attends? Trade PM, Super, Foremen + Onsite Team



2 Details

AGENDA ITEMS:

- Review Owner's Top 10
- Review work package checklist
- Collect and review pre-mobilization deliverables
- Set safety and quality expectations
- Set-up the first in place inspection
- Coordinate with all applicable trades
- Review schedule for work
- Complete testing expectations
- Review current project plans
- Follow-up on source/special inspections
- Finish inspections requirements
- Review all drawings
- Review all specifications
- Review site logistics
- Review Pre-con Safety Quality Form
- Detail the checklist or visual

A First Planner® Meeting

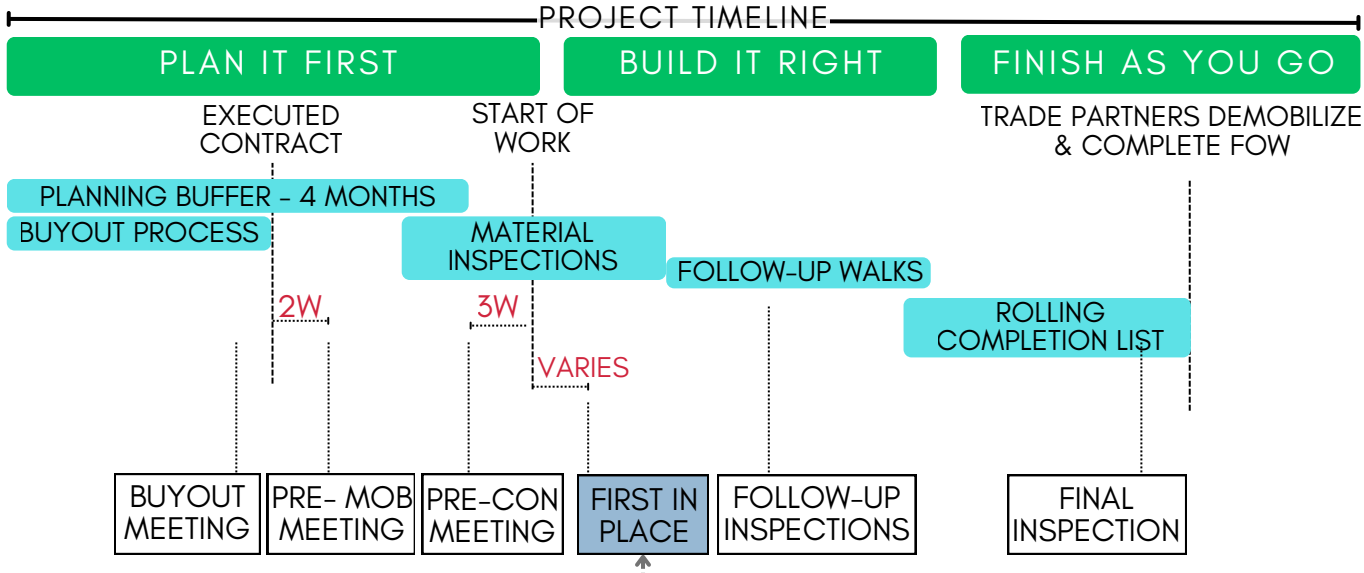
PRE-CONSTRUCTION MEETING

3 WEEKS BEFORE FIRST WAGON

Purpose: Collect and explain deliverables; enable the foreman and superintendent. Develop the quality checklist or visual.

FIRST IN PLACE INSPECTION

1 Who attends? GC Super & FE + Trade (Super, Foreman, & Crew)



2 Details

AGENDA ITEMS:

- Review Owner's Top 10
- Review work package checklist
- Review quality checklist and visual
- Review installation
- Confirm crew knowledge
- Congratulate the team
- Educate, educate, educate
- Are the checklists being used?
- Substrate accepted?
- Spec and drawings being reviewed?

A First Planner® & Last Planner® Inspection

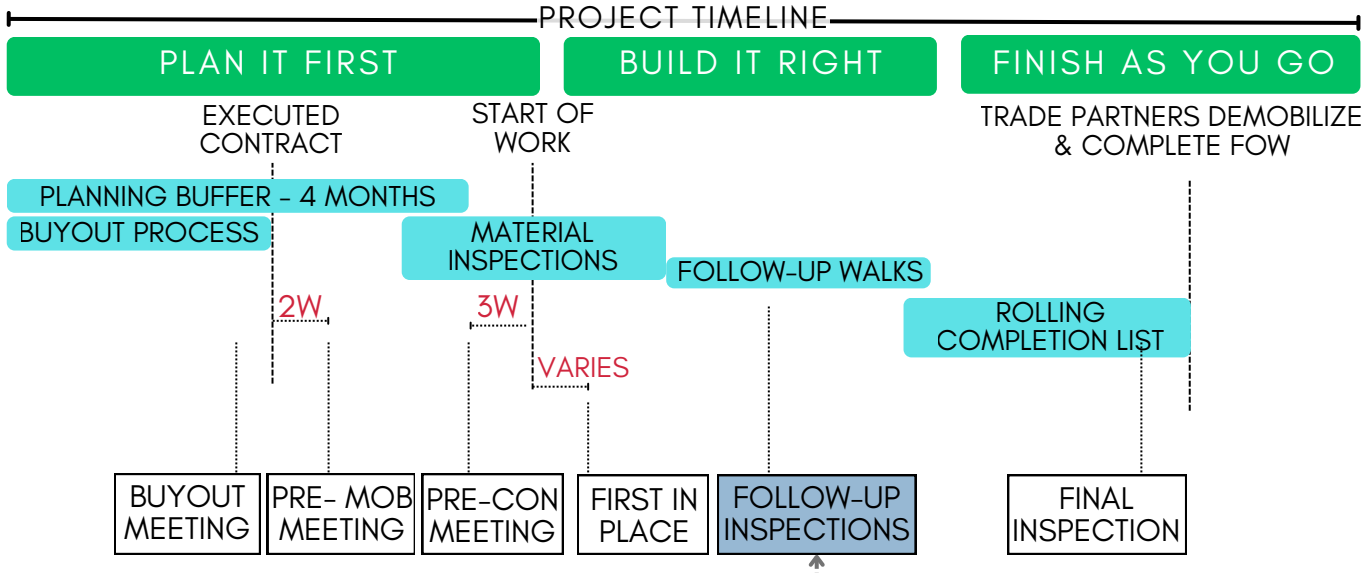
FIRST IN PLACE

ONCE FIRST PROCESS/WAGON IS DONE

Purpose: Get the crews off on the right foot; set the expectation and make sure it is followed.

FOLLOW-UP INSPECTION

1 Who attends? GC Super & FE + Trade (Super, Foreman, & Crew)



2 Details

AGENDA ITEMS:

- Review Owner's Top 10
- Review work package checklist
- Use tablet to inspect work
- Do we have the same Foremen?
- Are the crews up-to-date?
- Are the correct materials being used?
- Educate, educate, educate

A First Planner® & Last Planner® Inspection

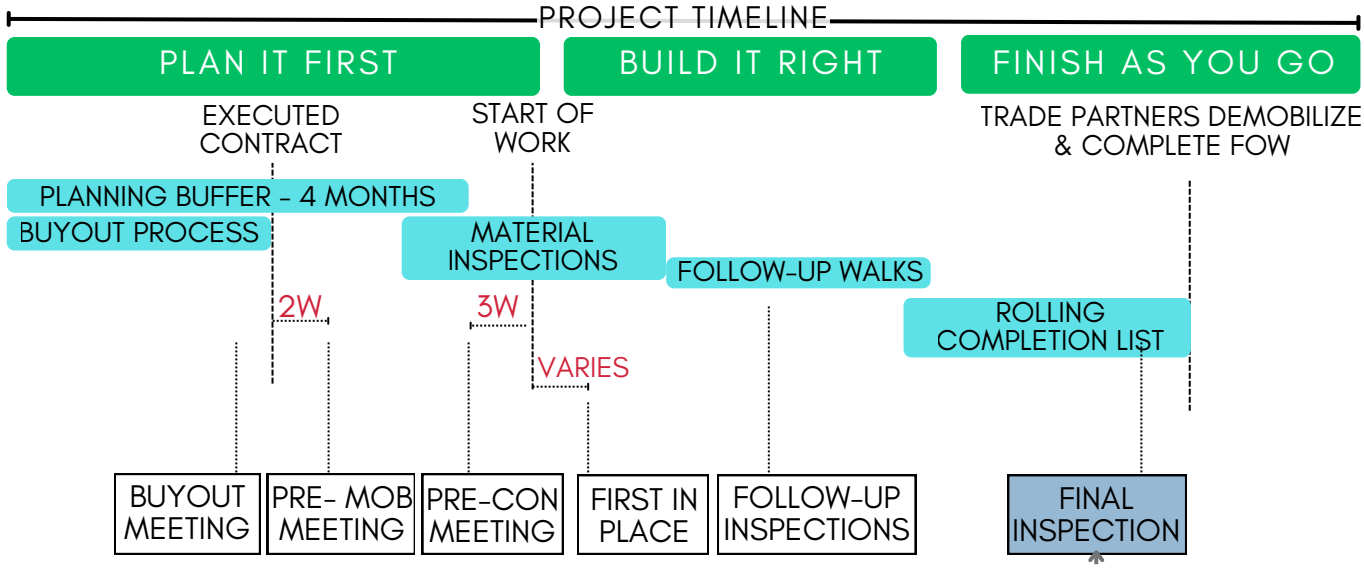
FOLLOW-UP INSPECTION

AS NEEDED

Purpose: Keep an eye on the work; check requirements on an ongoing basis.

FINAL INSPECTION

1 Who attends? GC Super & FE + Trade Super & Foreman



2 Details

AGENDA ITEMS:

- Review owner's Top 10
- Review checklist
- Perform a final inspection
- Log all items on rolling completion list
- Complete requirements before de-mob

A First Planner® & Last Planner® Inspection

FINAL INSPECTION

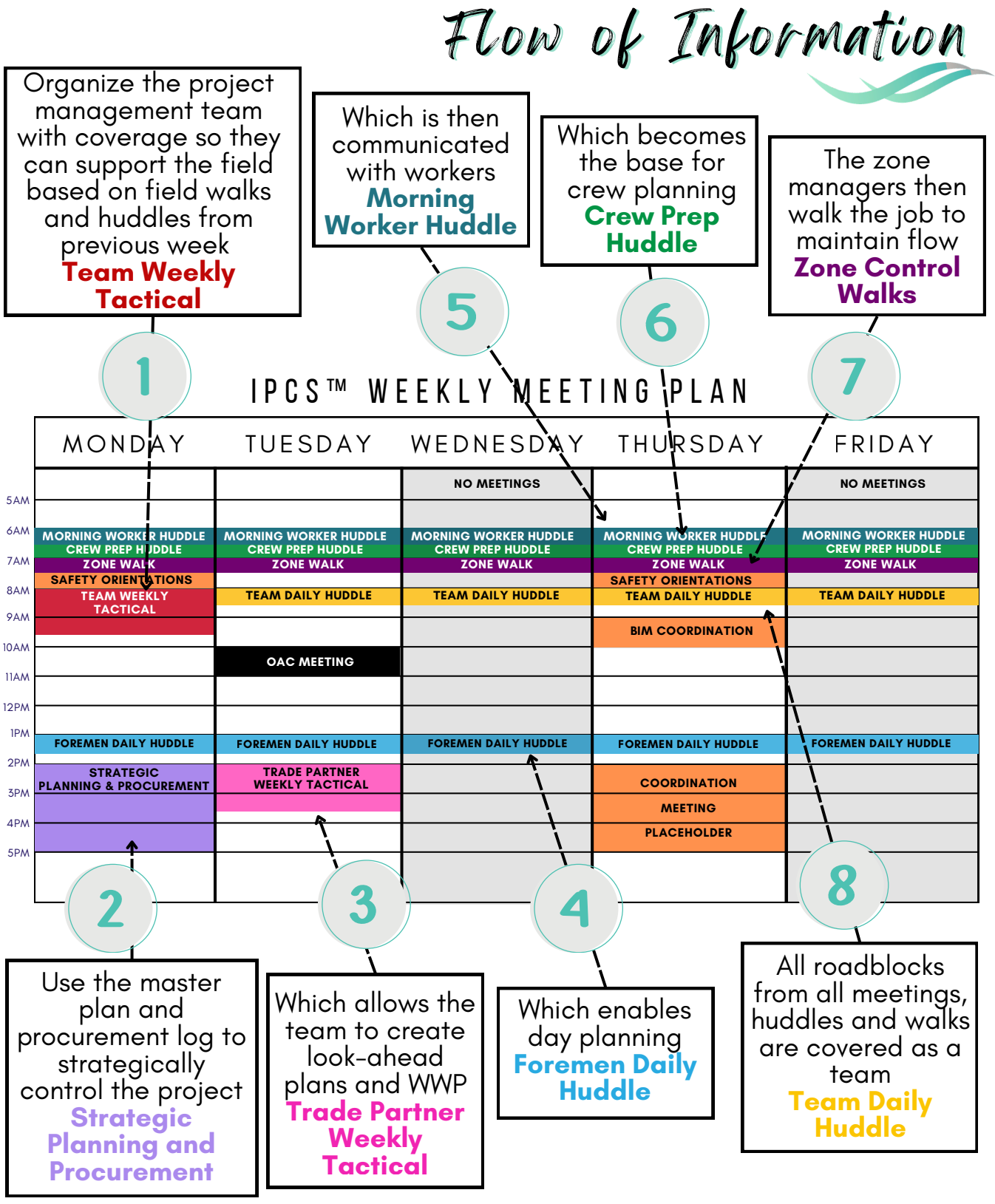
BEFORE DEMOBILIZATION

Purpose: Finish the contractor's scope before they leave.

05 MEETING SYSTEM



That's the last meeting! We've been detailing as we outlined the meeting and huddle system, but keep in mind that these interactions are not just about the details—they're about creating the flow of information to enable the flow of trades and their work. Each meeting builds on the other and works in a cadence to flow information all the way to the worker.



Everything we do in these meetings should enable flow—the meeting cycle, the visuals, and the outcomes are all designed to allow information to flow throughout the entire team and project. This will allow you to effectively steer and control the work flow on your project, and each meeting yields the pre-kitting needs of the next meeting.

1 OUTCOMES OF THE TEAM WEEKLY TACTICAL:

- Team coverage plan
- Trade partner prep TP3 managed
- We are building the team
- There is a team ready to support the work in the field

THIS IS THE PRE-KIT NEEDED FOR THE STRATEGIC PLANNING AND PROCUREMENT MEETING

2 OUTCOMES OF THE STRATEGIC PLANNING AND PROCUREMENT MEETING:

- Macro Takt Plan updated
- Procurement is managed
- Strategic vision is clear
- Buffers clear and managed

THIS IS THE PRE-KIT NEEDED FOR THE TRADE PARTNER WEEKLY TACTICAL

3 OUTCOMES OF THE TRADE PARTNER WEEKLY TACTICAL:

- Pull plan hosted
- Sequences confirmed
- Obtained buy-in from trades
- Zones and throughput optimized
- Managed production plan
- Scheduled pre-cons based on start dates
- Pull plans triggered by start dates
- Buffers gained through optimization
- Manage production through visualization
- Procurement aligned to start dates
- Correct look-ahead plans
- Work made ready six weeks out
- Find and remove roadblocks
- Find and optimize system constraints
- Complete WWP
- Filter from the production plan
- Adjust dates for commitments and handoffs
- Make commitments from trade to trade
- Complete plan for handoffs
- Publish a visual plan

THIS IS THE PRE-KIT NEEDED FOR THE AFTERNOON FOREMEN HUDDLE

4 OUTCOMES OF THE AFTERNOON FOREMEN HUDDLE:

- Day Plan Created
- Plan for next day completed together
- Roadblocks found and removed w/RRA
- Visuals created for all workers

THIS IS THE PRE-KIT NEEDED FOR THE MORNING WORKER HUDDLE, CREW PREP HUDDLE, AND THE ZONE CONTROL WALKS

5 OUTCOMES OF MORNING WORKER HUDDLE:

- Workers receive information
- Plan is communicated
- Social group strengthened
- Maintain operational excellence

6 OUTCOMES OF CREW PREPARATION HUDDLE:

- Workers receive information
- Plan is communicated
- Crews have visual plans
- Safety is prioritized
- Jobsite cleanliness is ensured

7 OUTCOMES OF ZONE CONTROL WALKS:

- Zone control is implemented
- Intentional prep for handoffs
- Work is punched as its completed
- Team understands the flow of the project

THIS IS THE PRE-KIT NEEDED FOR THE TEAM DAILY HUDDLE

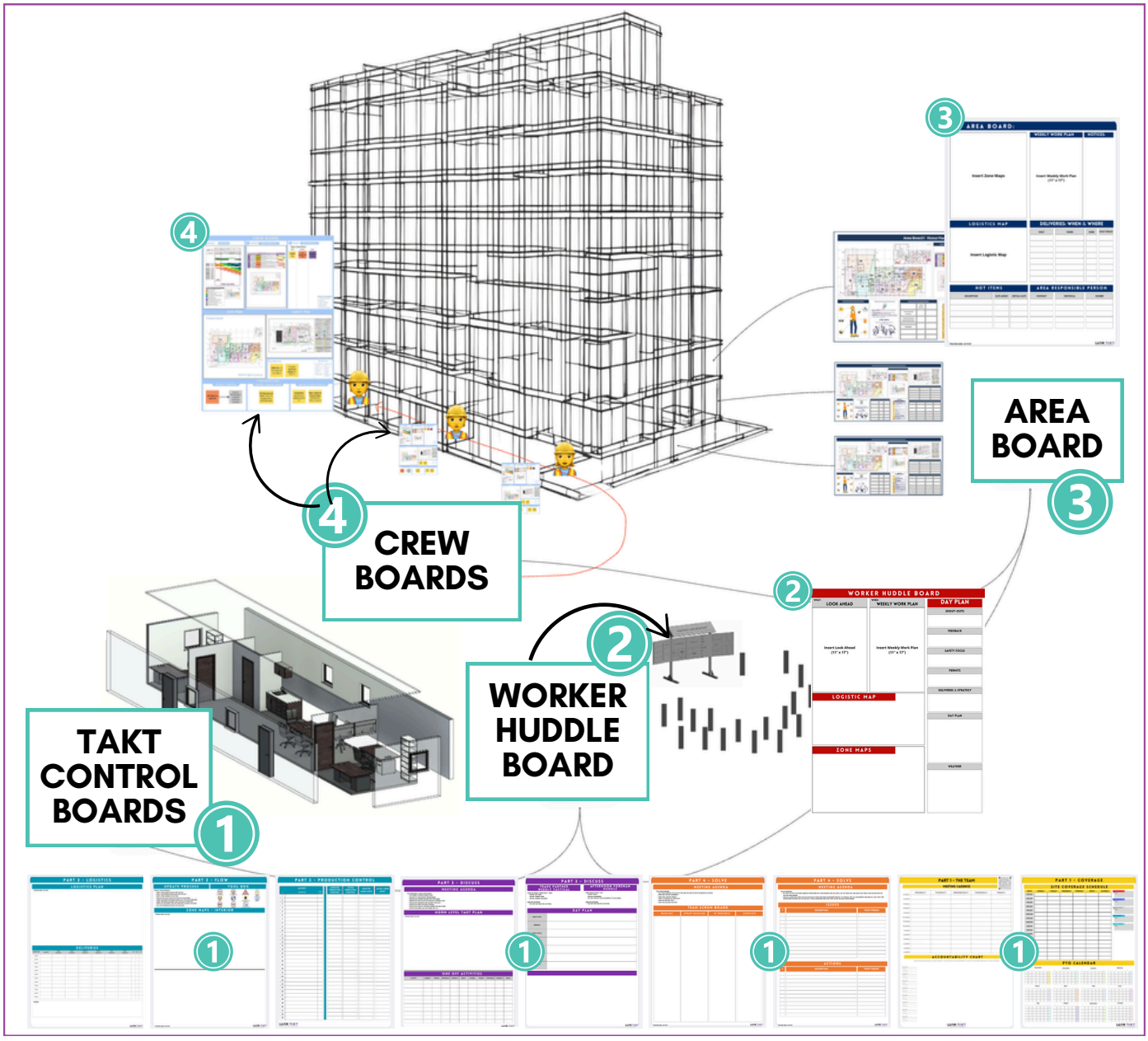
8 OUTCOMES OF TEAM DAILY HUDDLE:

- Office support is prioritized
- IDS for major issues
- Entire team aligned-office & field

THE OUTCOMES OF THE DAILY ZONE CONTROL WALKS, THE AFTERNOON FOREMEN, AND TEAM DAILY HUDDLES HELP SET THE AGENDA FOR THE NEXT WEEK'S TEAM WEEKLY TACTICAL.

The entire job site is coordinated to bring information to the entire project team, which is Lean, respectful, and enables flow. Here is a sketch of where people huddle and in what order.

1. **Takt Control Boards** - Four sets of boards where planning with Last Planners® is done in the **Trade Partner Weekly Tactical**, **Afternoon Foreman Huddle**, and in pull plans.
2. **Worker Huddle** - Where the day plan is communicated to workers in the **Morning Worker Huddle**.
3. **Area Board** - Where crews in an area can access general information. These are not referenced in any meeting. It's a general information board.
4. **Crew Board** - Where trades can plan their work as a crew in one-process flow in the **Crew Preparation Huddle**.



TEAM WEEKLY TACTICAL

ATTENDEES: SUPERS,PM'S, PE'S, FE'S **LEAD:**

MUSIC TO GATHER AT TEAM BOARDS	-5 MIN
--MEETING START--	
SHOUT OUTS	1 MIN
LIGHTNING ROUND	5 MIN
REVIEW COVERAGE AND PTOS	2 MIN
SAFETY MANAGEMENT- PLAN HIGH RISK AREAS	4 MIN
CUSTOMER EXPERIENCE REVIEW-WIN THE NEXT JOB WITH CURRENT SUCCESS	5 MIN
TP3 REVIEW: FIND OUT WHERE TRADES ARE AND MAKE NEEDED ASSIGNMENTS	8 MIN
SCHEDULE MANAGEMENT	8 MIN
COSTS AND BUDGET	8 MIN
RISK AND OPPORTUNITY REGISTER • REVIEW THE LOG, MAKE ASSIGNMENTS • STATUS ITEMS AS RED, YELLOW, OR GREEN	8 MIN
TEAM MOMENTS: • PATRICK LENCIONI TOOLS • SAY POSITIVE THINGS • USE THIS IS ME DOCUMENT • COMMUNICATE A TEAM MESSAGE	8 MIN
PLUS/DELTA	2 MIN
TOTAL SUGGESTED TIME	60 MIN

ELEVATE CONSTRUCTION LLC

STRATEGIC PLANNING AND PROCUREMENT

ATTENDEES: SUPERS,PM'S, PE'S **LEAD:**

MUSIC TO GATHER AT TEAM BOARDS	-5 MIN

--MEETING START--

SHOUT OUTS	1 MIN
LIGHTNING ROUND	7 MIN
SAFETY TOPIC	2 MIN

REVIEW THE TAKT PLAN — 15 MIN+

- MAKE SURE IT IS ACCURATE
- REVIEW THE MACRO
- MAKE STRATEGIC DECISIONS
- REVIEW THE REMAINING BUFFER RATIO
- CONFIRM THE PROJECT IS BROKEN DOWN PROPERLY

REVIEW THE PROCUREMENT LOG — 15 MIN+

- CONFIRM LOG IS ACCURATE
- SOLVE ANY PROBLEM THAT WILL CAUSE A DELAY
- LEVEL THE WORK OF THE PROCUREMENT LOG

REPORT OUT; SCALE INFORMATION TO THE ENTIRE TEAM THROUGH THE MEETING SYSTEM	5 MIN
PLUS DELTA	1 MIN

ELEVATE CONSTRUCTION LLC

TOTAL SUGGESTED TIME **45 -90 MIN**

TRADE PARTNER TACTICAL

ATTENDEES: SUPERS, PE'S, PE'S, FOREMEN LEAD:

MUSIC TO GATHER AT TRAILER	-5 MIN

--MEETING START--

SHOUT OUTS	1 MIN
SAFETY TOPIC	1 MIN

REVIEW TAKT PLAN:
• REVIEW THE MACRO FOR ACCURACY
• REVIEW THE NORM FOR ACCURACY
  ◦ REVIEW PRODUCTION TRENDS
  ◦ IDENTIFY MAKE-UP/COME BACK WORK
  ◦ IDENTIFY PCF AND CHECK ON BUFFERS
	8 MIN

REVIEW LAST WEEK: • VERIFY CHECK MARKS • ANY ITEMS THAT NEED TO COME FORWARD? • GENERAL CONSENSUS ABOUT KPIS	6 MIN
REVIEW CURRENT PROGRESS: • HOW ARE WE TRENDING THIS WEEK? • SHOW HOW THE CADENCE GOES • CORRECTIONS FOR THE REST OF THE WEEK	5 MIN
CREATE WEEKLY WORK PLAN: • BRING IN THE FORMAT FOR NEXT WEEK • TALK ABOUT HANDOFFS + READINESS • ADD ROADBLOCKS AS YOU GO • FINALIZE AND PUBLISH	15 MIN
6 WEEK LOOK AHEAD (FOCUS ON WK 2-6) • HAVE COPIES READY • ASK EVERYONE TO FIND A PROBLEM • USE THE CHECKLIST ON THE WALL • ADD ROADBLOCKS TO THE TEAM BOARDS	15 MIN
REVIEW AND REMOVE ROADBLOCKS • GO THROUGH EACH ONE • ASSIGN AN OPUR • STATUS EACH ONE; HELP EACH OTHER AS A TEAM	8 MIN
PLUS/DELTA	1 MIN

TOTAL SUGGESTED TIME 60 MIN

ELEVATE CONSTRUCTION LLC

FOREMEN HUDDLE-AFTERNOON

ATTENDEES: SUPERS,FE'S, FE'S, FOREMEN LEAD:

MUSIC TO GATHER AT PROJECT BOARDS	5 MIN

--MEETING START--

TURN IN DAILY REPORTS	1 MIN
SHOUT OUTS	1 MIN
REVIEW DAY'S PROGRESS	5 MIN
REVIEW ROADBLOCKS	5 MIN
REVIEW HANDOFFS	5 MIN
PLAN DETAILS FOR TOMORROW'S PLAN:	15 MIN

- SAFETY
- QUALITY
- LOGISTICS
- DELIVERIES
- INSPECTIONS

FINALIZE PLAN	8 MIN
PREPARE PERMITS	5 MIN

TOTAL SUGGESTED TIME 45 MIN

ELEVATE CONSTRUCTION LLC

MORNING WORKER HUDDLE

ATTENDEES: SUPERS,FE'S, FOREMEN, CREWS **LEAD:**

MUSIC TO GATHER AT DAY BOARD	-5 MIN

--MEETING START--

STRETCH + FLEX	5 MIN
SHOUT OUTS	1 MIN
REQUEST FEEDBACK FROM WORKERS	2 MIN
REVIEW THE PLAN FOR THE DAY: • SAFETY FOCUS • PERMITS • DELIVERIES • IMPORTANT POINTS • WEATHER REPORT	7 MIN
ADDRESS OWNER ITEMS	1 MIN
TRAINING MOMENT	1 MIN
ENCOURAGE CREW PREP HUDDLES	1 MIN
REINFORCE THE NEED FOR PTPS	1 MIN
LEAVE WITH RALLY CRY	1 MIN

TOTAL SUGGESTED TIME **20 MIN**

ELEVATE CONSTRUCTION LLC

DAILY ZONE CONTROL WALK

ATTENDEES: SUPERS, PM'S, PE'S, FE'S **LEAD:**



GRAB DAY PLAN AND WWP — 5 MIN



WALK PROJECT BY ZONES

ZONE ___: — 10 MIN

- MEET FOREMEN IN THE FIRST HANDOFF
- DISCUSS DEADLINE, PREPARE AHEAD
- PUNCH AS YOU GO AND TAKE NOTES

ZONE ___: — 10 MIN

- MEET FOREMEN IN THE SECOND HANDOFF
- DISCUSS DEADLINE, PREPARE AHEAD
- PUNCH AS YOU GO AND TAKE NOTES

ZONE ___: — 10 MIN

- MEET FOREMEN IN THE THIRD HANDOFF
- DISCUSS DEADLINE, PREPARE AHEAD
- PUNCH AS YOU GO AND TAKE NOTES

ZONE ___: — 10 MIN

- MEET FOREMEN IN THE FOURTH HANDOFF
- DISCUSS DEADLINE, PREPARE AHEAD
- PUNCH AS YOU GO AND TAKE NOTES



BRING INFORMATION TO TEAM



TAKE ACTION TO CREATE FLOW

TIME VARIES

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TEAM DAILY HUDDLE

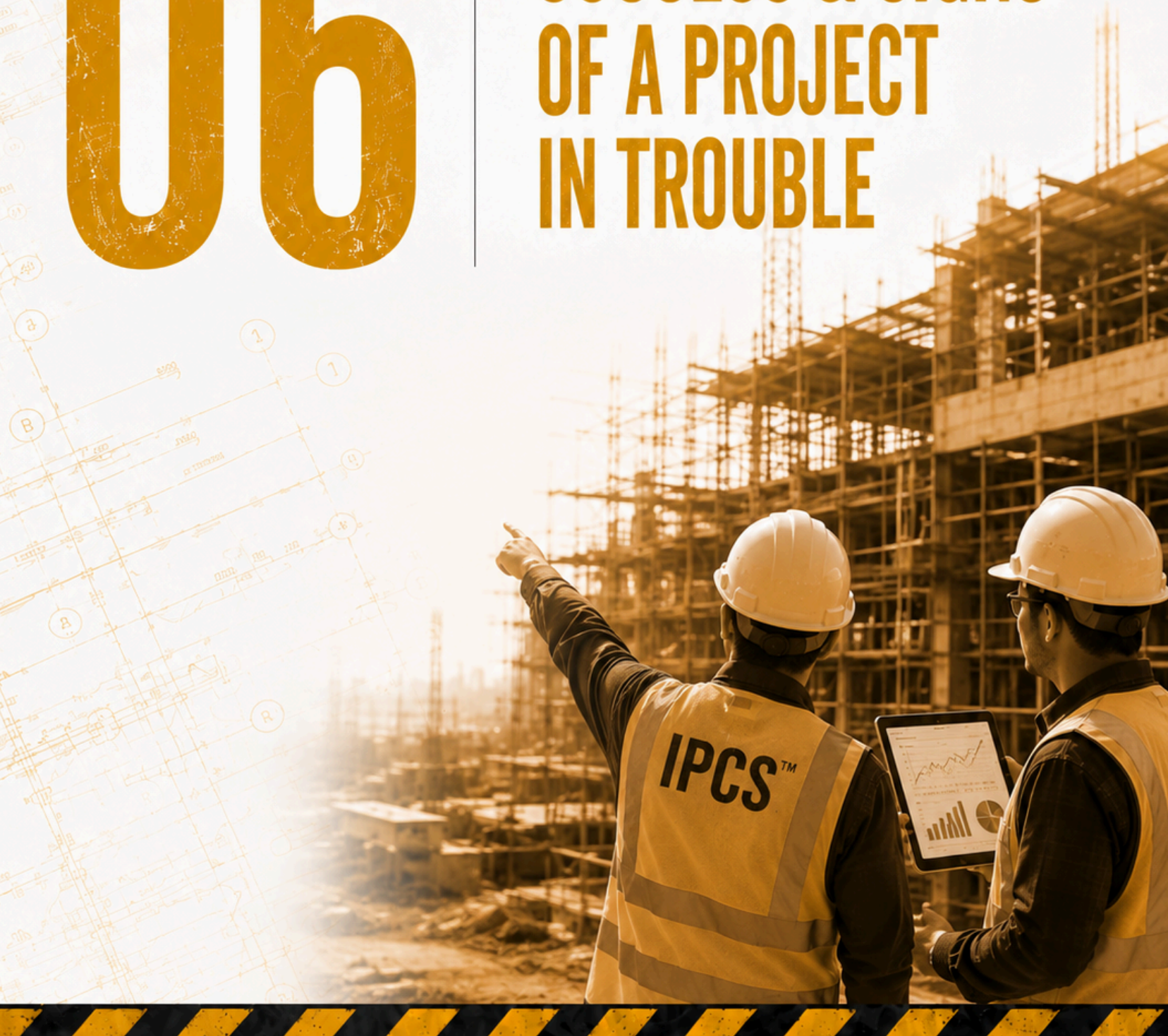
ATTENDEES: SUPERS, PM'S, PE'S, FE'S LEAD:

MUSIC TO GATHER AT SCRUM BOARD	-5 MIN

--MEETING START--

SHOUT OUTS	1 MIN
GO AROUND THE ROOM AND DISCUSS: • WHAT WAS ACCOMPLISHED YESTERDAY? • WHAT ARE YOU WORKING ON TODAY? • WHAT DO YOU NEED HELP WITH? • WHAT IS IN YOUR WAY?	15 MIN
CONFIRM TASKS ARE PRIORITIZED	5 MIN
DISCUSS MAJOR ISSUES, MAKE ASSIGNMENTS AS NEEDED	7 MIN
UPDATE SCRUM AS NEEDED	1 MIN
PLUS/DELTA	1 MIN
TOTAL SUGGESTED TIME	30 MIN

06 SUCCESS & SIGNS OF A PROJECT IN TROUBLE





12 ROOT CAUSES OF PROJECT FAILURE



The underlying conditions that cause projects to fail.

01 LACK OF PLANNING
No clear path before work begins.

02 WEAK PM/SUPER LEADERSHIP
Leaders are not aligned, prepared, or effective.

03 SCOPE CREEP AND PROJECT CHANGES
Constant change creates confusion and rework.

04 POOR SCHEDULING AND NO FLOW
Work is out of sequence and momentum stalls.

05 SKILL GAPS IN THE TEAM
People are in roles they are not ready to perform.

06 WEAK MANAGEMENT SUPPORT
Roadblocks are not removed in time.

07 FUNDING AND COST PRESSURE
Budget stress drives poor decisions.

08 RESOURCE SHORTAGES
Labor, materials or equipment are not ready.

09 POOR INFORMATION MANAGEMENT
RFIs, submittals, buyout, or communication are late.

10 NO ONGOING RISK ANALYSIS
Risks are not tracked, discussed or mitigated.

11 MISALIGNED INCENTIVES
People optimize for the wrong goals.

12 DYSFUNCTION AND LOW MORALE
Turnover, toxic vibes and poor communication grow.

Project failure usually begins long before it is visible. These root causes quietly erode flow, leadership, communcation and team performance.



SIGNS OF A PROJECT IN TROUBLE

What you see onsite when a project is drifiting toward failure.

DECLINE IN SAFETY AND HOUSEKEEPING

The site feels unsafe dirty, and rushed.

SCHEDULE SLIPS DAILY

Weekly promises are missed and priorities shift.

WORK FLOW IS BROKEN

Trades stack up, stop, restart, and work out of sequence.

SCOPE CHANGES CREATE CONFUSION

Rework increases and responsibilities are unclear.

PLANS ARE NOT VISIBLE

No clear short-interval plan; crews wait for direction.

QUALITY ISSUES BECOME NORMAL

Mistakes repeat and unfinished work gets covered up.

LEADERSHIP IS NOT ALIGNED

PM, super, foremen, and owner give different direction.

INFORMATION IS LATE OR MISSING

Drawings, RFIs, submittals and answers are not ready.

TEAM MORALE IS LOW

Frustration, blame, and disengagement are present.

COMMUNICATION IS BREAKING DOWN

The field, office, and partners have different versions of truth.

MATERIALS, LABOR, OR EQUIPMENT NOT READY

Crews lose time waiting to start work.

RISK IS NOT BEING MITIGATED

Problems are discussed, but not resolved.

If the project feels chaotic, it usually is. Confusion, waiting, clutter, rework, and tension are signs the system is breaking down.

WHY LEAN FAILS

REASONS WHY IMPROVEMENT BREAKS DOWN

LEADERSHIP FAILURES

1. Money is the wrong answer.
2. Software is not leadership.
3. The leader must lead the Lean effort.
4. Leaders won't change themselves.
5. Leaders won't face their own waste.
6. Managers run their own way, instead of aligning with leaders.

CULTURAL BARRIERS

1. Silence feels safer than collaboration.
2. Comfort is chosen over progress.
3. "That's not my job" ends improvement.
4. Middle management feels threatened.
5. Survival instincts override improvement.
6. Transparency is missing.

SYSTEM & MANAGEMENT TRAPS

1. Committees kill decisions.
2. Email is an addiction and kills production.
3. Classical management always wins.
4. The wrong metrics sabotage flow.
5. Silos replace systems.
6. Lean has nowhere to live.

FAKE LEAN SIGNALS

1. Fake Lean replaces real Lean.
2. Lean becomes a weapon.
3. "Respect for people" is just a poster.
4. Tools without thinking changes nothing.
5. We got this.
6. We don't need that anymore.

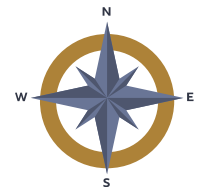
WHAT USUALLY KILLS LEAN?



How a Company Begins with Lean

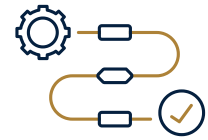
A PRACTICAL ROADMAP

1 Set the Direction



- Define your TRUE NORTH: safety, quality, delivery, cost, people.
- Pick 3 non-negotiables for leadership behavior.
- State the business problem in plain language.
- Name one executive Lean leader and create a small Lean team.

2 Start with One Model Line



- Choose one value stream that matters and is small enough to improve quickly.
- Set baseline metrics: lead time, on-time delivery, first-pass quality, WIP, productivity, safety.
- Map the current state and expose the real enemy: lead time.
- Set a future-state target with a clear improvement goal.

3 Make the Work Visible and Flow



- Run a 6S and visual management reset.
- Rearrance work into better flow and reduce batch sizes.
- Remove obvious barriers like waiting, travel and unclear priorities.
- Attack setup time with SMED.
- Add pull systems such as FIFO lanes, kanban, and WIP limits.

4 Build the Daily Lean Operating System

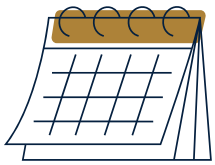


- Create standard work for teams and leaders.
- Install daily huddles and clear escalation paths.
- Schedule weekly kaizen and daily small improvements.
- Build quality at the source with in-process checks and stop-to-fix responses.

5 Sustain, Expand, and Respect People



- Align finance and metrics to reinforce flow, not overproduction.
- Extend Lean upstream and downstream with suppliers and customer promises.
- Make respect for people operational: train everyone, coach at the gemba, and redeploy people, rather than laying them off.



12 WEEK STARTING CADENCE

Weeks 1-2: True North, leadership cadence, model line, baseline, VSM
Weeks 3-4: 6S, visual management, layout changes, daily huddles
Weeks 5-6: SMED, smaller batches, lower WIP
Weeks 7-8: Pull system and standard work
Weeks 9-10: Problem solving and quality at the source
Weeks 11-12: Lock in daily management, create a playbook, pick the next value stream

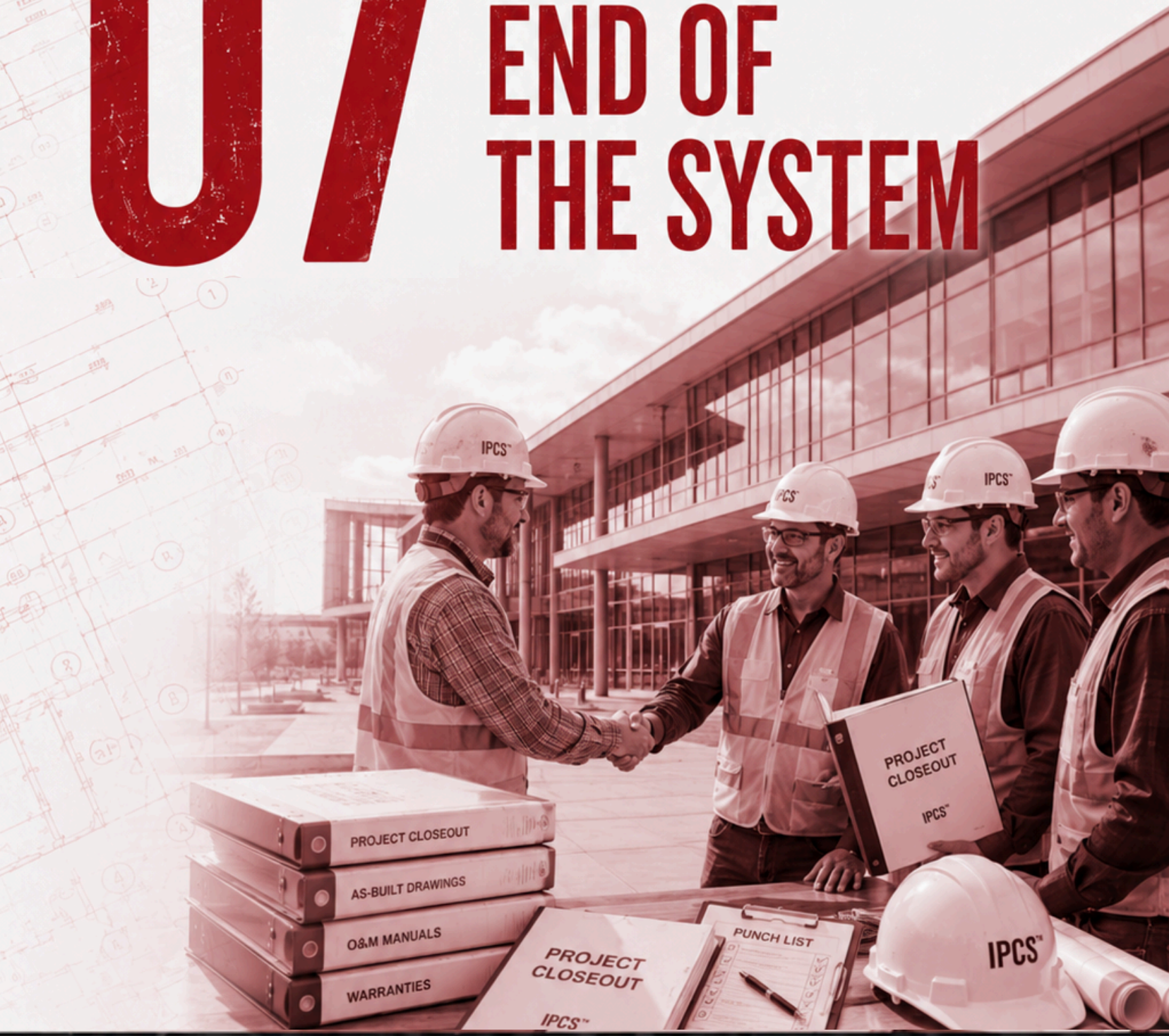
COMMON MISTAKES TO AVOID

Starting with posters instead of changing the work.
Delegating Lean while leaders avoid the gemba.
Keeping batch/queue systems and calling it Lean.
Measuring efficiency instead of flow.



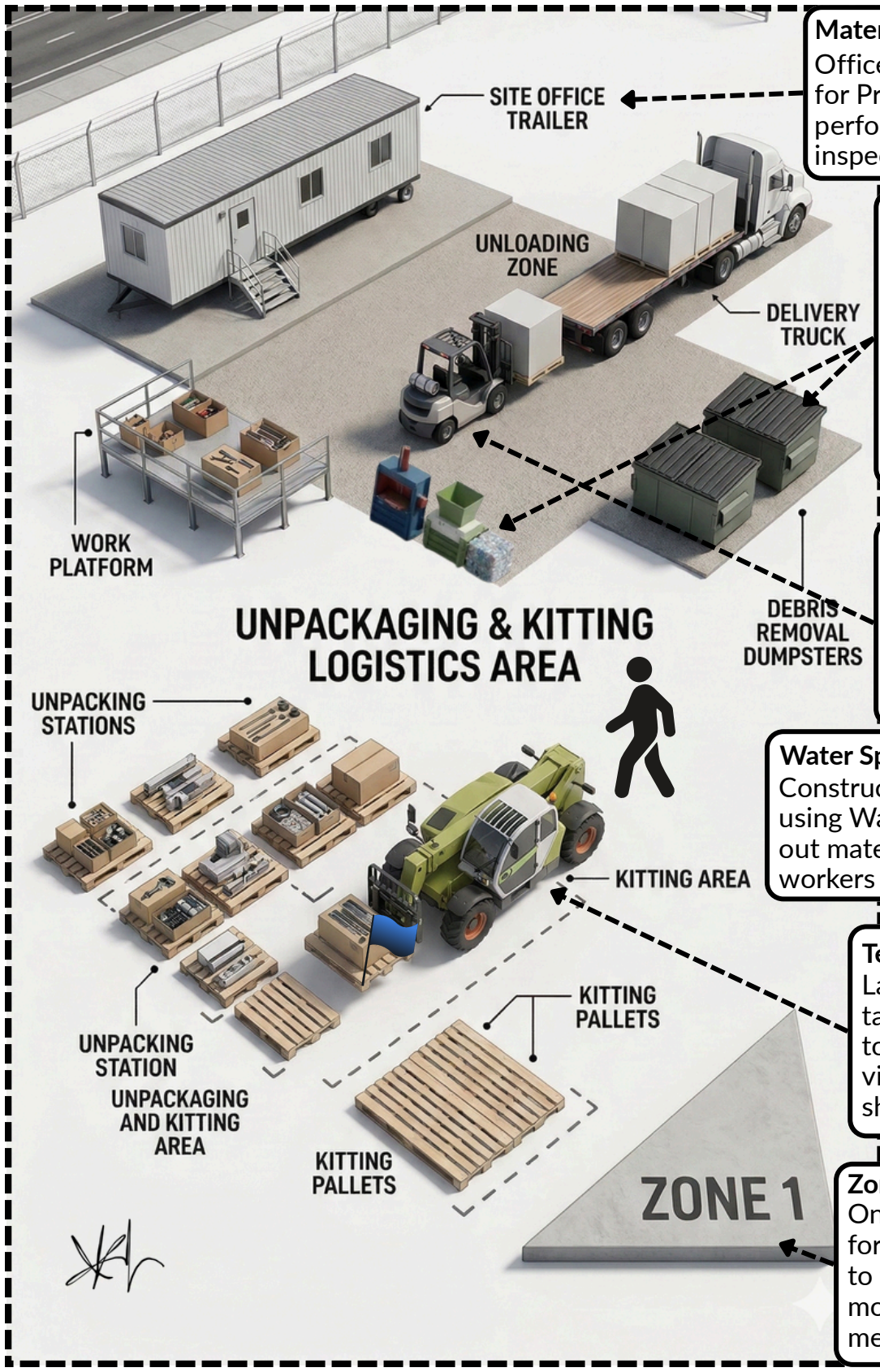
IPCS™
INTEGRATED PROJECT CONTROL SYSTEM

07 THE ULTIMATE END OF THE SYSTEM



Logistics Queuing for Full Kit

Prepare Materials Properly to be Staged in Zones for Full Kit



Material Inspections:
Office is close enough for Project Engineers to perform materials inspections for deliveries.

Waste:
Instead of hauling trash into the building, wrapping, cardboard, and shipping is disposed of here, recycled, compacted, and bailed.

Yard Layout:
A smaller and cheaper shop lift can be used on stabilized ground to unload and kit for zones.

Water Spiders:
Construction could begin using Water Spiders to shake out materials and get them to workers in zones.

Telehandlers:
Larger forklifts then take kitted materials to the zone. Use visual indicators to show readiness.

Zone Thinking:
Only what is needed for the zone is taken to the zone in the most frictionless method.

FULL KIT IN THE ZONE

Planning, supply chain management, and kitting make sure the crew has the information, materials, tools, and equipment needed to start and finish work within takt time.

1 PLANNING

TAKT PLAN

ZONE	WORK	TAKT	STATUS
Z1	Framing	4 HR	✓
Z2	MEP Rough-In	5 HR	✓
Z3	Drywall	6 HR	○
Z4	Finishes	4 HR	○

ZONE MAP



WORK PACKAGE

WP-Z3-012
MEP ROUGH-IN
Scope: Install conduit and boxes as shown.
Location: Level 2, Zone 3
Takt Time: 5 Hours

CHECKLIST

- ☑ Drawings Reviewed
- ☑ Materials Confirmed
- ☑ Permits Verified
- ☑ Pre-Work Complete





ZONE 3 – MEP ROUGH-IN KIT



2 SUPPLY CHAIN

PROCUREMENT
Approved vendors on time, in full

DELIVERY
Scheduled deliveries on time

REPLENISHMENT
Min/Max & pull replenishment

LOGISTICS
Unload, stage, and deliver



3 KITTING

- Stage by zone
- Label and organize
- Verify complete



FULL KIT = READY TO START

No waiting. No searching. No missing items.

READY INFORMATION
Right information, right when you need it.

READY MATERIALS
Right materials, right quantity, right quality.

READY TOOLS
Right tools, organized and ready to use.

READY EQUIPMENT
Right equipment, inspected and ready to go.

A complete kit helps the crew enter the zone fully prepared and finish the work within takt time.

Crew Preparation w/ Full Kit

The huddle that garners the wisdom of the worker and provides Full Kit

Rolling Board:
Rolling magnetic crew board follows the crew as a reflection and planning visual.

Crew Board:
Board includes the Look-ahead, Weekly Work Plan, and Production Visuals

Huddle Agenda:

- Shout-outs
- Safety Training Topic
- Review Last Day or Zone
- Reflect & Make Improvements
- Plan the Day
- Lean Training
- Stretch & Flex
- Walk Work Area
- Fill out PTP
- 5S & Look For 8 Wastes



Back of Board:
Back includes folders for Installation Work Packages & Meeting Guides