A TAKT + AWP FIELD MANUAL

Before-Phase Planning

How to prepare a Takt phase so it runs the way it was drawn.

Confirming the plan tells you the phase is right. Preparing the phase is what makes it run. This manual is about everything you do before the first crew steps off — the work that decides the outcome before the clock ever starts.

Illustrated with the MBCC Macro Production Strategy
A worked example of a before-phase war room

Contents

1. The Departure Board **3**

2. Why Preparation Is the Real Work **4**

3. The Three You Already Do **5**

4. The Before-Phase System **6**

4.1 Confirm the Route 6

4.2 Set the Standard and Rehearse the First Run 7

4.3 Crew the Train 8

4.4 Stock the Stations 9

4.5 Clear the Track and Set the Signals 10

5. How to Do It **12**

Appendix — The Before-Phase Checklist **14**

1. The Departure Board

A Takt phase is a train running to a timetable. The wagons are your trades; the stations are your zones; the cadence is the beat you set when you balanced the line. Once you release that train, it does not stop. It cannot stop. The whole power of Takt is that the next wagon is already right behind the last one, so a crew that pulls into a zone and finds a forgotten bolt, a sealed RFI, or a missing scaffold does not get to wait — it either drags the whole train behind it or it gets passed and the rhythm breaks.

That is why everything that decides whether a phase succeeds is decided before the train leaves the platform. A railway does not stock the dining car while the train is moving. It does not inspect the track with passengers aboard. Long before departure, someone walked the line: the track is clear and signaled green, every station down the route is stocked and staffed ahead of the train's arrival, the crew has been briefed, the cars are loaded, the tricky junctions have been rehearsed, and a dispatcher has already war-gamed what to do if the weather turns. The departure is the easy part. The preparation is the work.

Before-phase planning is that preparation. You have already done the hard analytical work: you confirmed the *sequence* from the pull plan, confirmed the *line of balance* with the Takt calculator, confirmed the *buffers* with a risk analysis, and *optimized* the phase by hunting bottlenecks. That tells you the phase is drawn right. None of it tells you the phase will run. The gap between a plan that is correct on paper and a phase that actually flows is closed by one thing — preparation — and that is what this manual is for.

> **THE ONE IDEA**
> *A confirmed plan proves the phase is right. A prepared phase is what makes it run. They are two different jobs, and the second one is where the time is won or lost.*

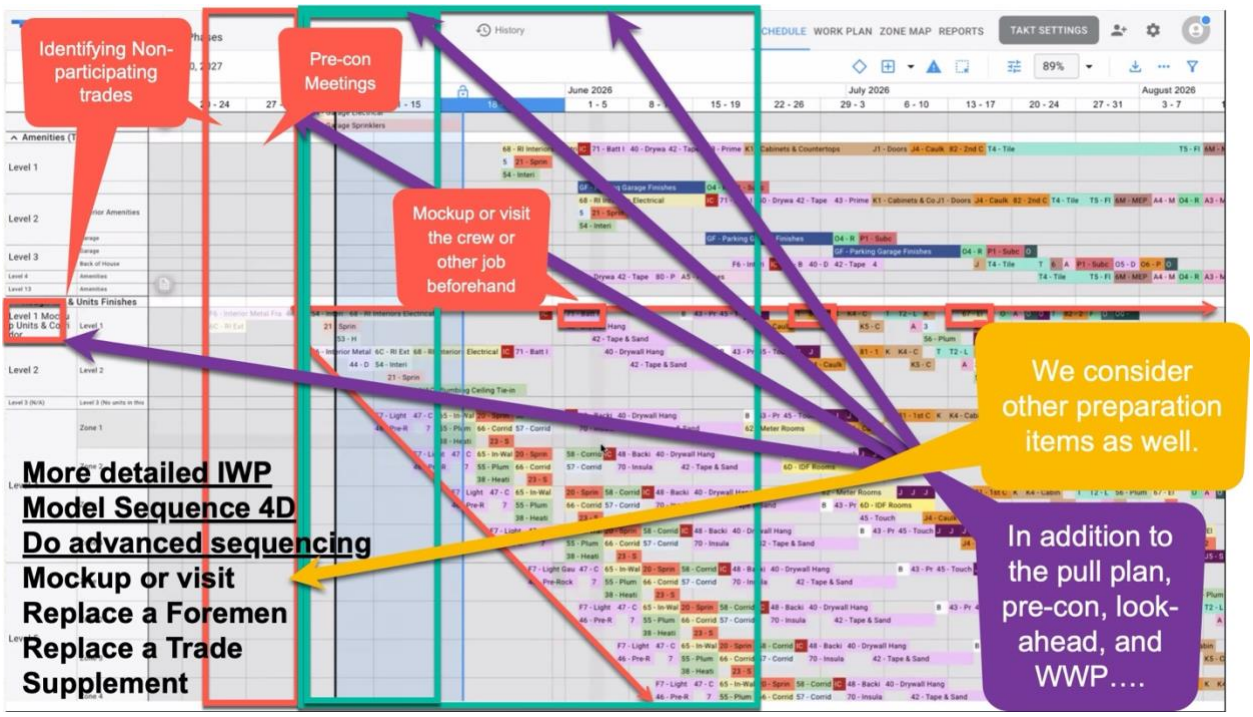


Figure 1. *A live Takt schedule (inTakt) marked up with before-phase moves. Each annotation — identify non-participating trades, pre-con meetings, mockup or visit a crew on another job, model the sequence in 4D, do advanced sequencing, build a more detailed IWP, and the personnel moves (replace a foreman, replace a trade, supplement) — is a preparation action layered onto the wagons before they roll.*

2. Why Preparation Is the Real Work

Takt is unforgiving by design, and that is its gift. A traditional schedule hides slack everywhere, so a crew that shows up unready can absorb the loss quietly and the float disappears one day at a time. A Takt phase has the slack pulled out and parked deliberately in buffers, so unreadiness shows up immediately and visibly — a wagon misses its zone and the whole line feels it the same week. The discipline that makes Takt fast is the same discipline that punishes a phase you walked into unprepared.

So the question that governs this manual is simple: when the first wagon rolls into the first zone, is every condition it needs already true? Not promised, not ordered, not “being worked on” — true. Before-phase planning is the systematic effort to make every one of those conditions true before release, and to prove the parts you are least sure about before they cost you anything.

It helps to see preparation as three jobs that run at the same time:

- Validate — stress-test the sequence and the packaging until you trust them, on paper, where changes are free.
- Make ready — remove every constraint in front of every wagon so nothing waits on information, materials, access, or approvals.
- Prove — rehearse the method and set the standard before the first real cycle hardens into the way it gets done for the rest of the phase.

Everything in this manual lands in one of those three jobs. The rest of it is just the catalog of moves — and the judgment about which ones a given phase actually needs.

3. The Three You Already Do

Before-phase planning is not a replacement for the lean planning system you already run. It is the layer that sits on top of it. Three practices are assumed to be in place, and the rest of this manual builds on them rather than repeating them:

- **The pull plan, about three months ahead** — the trades build the handoffs backward from the milestone so the sequence and the promises are theirs, not yours. This is where the phase first becomes real to the people who will run it.
- **Pre-construction meetings, about three weeks before every wagon** — each trade walks its scope, its predecessors, its conditions of satisfaction, and its constraints before it is due to start, not on the morning it starts.
- **Look-ahead planning** — the rolling six-week (or similar) window where constraints are surfaced and knocked down week by week so that only ready work is ever committed.

If those three are not running, fix that first; the moves below assume them. What follows is everything else you can do to prepare a phase — the moves that separate a team that merely schedules well from one that arrives ready.

4. The Before-Phase System

The moves are grouped into five workstreams. They are ordered the way a railway prepares a line: you confirm the route, you set the standard at the first station and rehearse the hard parts, you crew the train, you stock every station ahead of the train's arrival, and finally you clear the track and turn the signals green. Run them roughly in that order, but in practice they overlap and feed each other.

4.1 Confirm the Route

Validate the sequence and the packaging until you trust them on paper, where changes cost nothing. This is the cheapest place to find a mistake and the most expensive place to miss one.

- **Fresh-eyes meeting** — experienced outsiders who are not attached to the plan stress-test it on paper. People who built it cannot see its blind spots; people who did not build it can.
- **Pre-mortem / risk register with pre-assigned mitigations** — assume the phase failed, then work backward to why. Log each risk and pre-assign its mitigation and owner now, so the response is a decision already made rather than a scramble later.
- **4D sequencing** — tie the schedule to the model and watch the phase build itself in time. Clashes, access conflicts, and crane or laydown collisions that are invisible in a bar chart become obvious when you can see the building grow.
- **Advanced sequencing, page by page** — go through the area drawings sheet by sheet and walk the intended order of work at the detail the field will actually feel, not the level the bar chart shows.
- **Advanced visualization** — foam, kinetic sand, or detailed physical and 3D models. A table the team can stand around and point at surfaces sequence and logistics arguments that a screen hides.
- **More detailed IWP (Installation Work Packages)** — break the work down to packages a crew can finish in a known, short window with everything attached. The finer the package, the truer the plan and the earlier the constraints reveal themselves.
- **CWP-to-IWP breakdown session** — the superintendent, general foreman, and AWP manager sit with the field and break each Construction Work Package into Installation Work Packages together. Ownership of the breakdown is half the value.
- **Classify IWP complexity** — size each package low, medium, or high before committing. Complexity is not duration; a short package can be high-risk, and it deserves more preparation, not less.
- **Zone map + density / leveling analysis** — confirm the zones are sized so work and manpower are level across them. A lumpy density map is a warning that your cadence will fight you zone to zone.
- **Buffer placement** — decide deliberately where capacity, time, space, and plan/backlog buffers sit. Buffers are not slack you forgot to remove; they are protection you placed on purpose where the risk analysis told you to.

- **Multi-train design** — let trades run at their natural rhythms rather than forcing every trade onto one beat. A fast trade and a slow trade on separate trains, properly offset, beats jamming both into a single cadence.
- **Build your Lego sheet** — the single coordinated reference that shows how the standardized work blocks stack and repeat across zones — the kit of parts the whole phase is assembled from.
- **Confirm the 3D model is the single source of truth** — data tagged, quantities and component IDs aligned, before anyone plans off it. If two people are reading two different models, you do not have a plan; you have two.
- **Define Rules of Credit / Rules of Progress** — decide how percent-complete is earned for each package before day one. Set the rules before the work, or every status meeting becomes an argument about what “done” means.

4.2 Set the Standard and Rehearse the First Run

Prove the method and fix the definition of “done” before the first real cycle hardens into the way the whole phase gets built.

- **Mockup** — build it once, for real, before you build it a hundred times. The mockup is where the method, the materials, and the sequence get argued out at full scale while mistakes are still cheap.
- **Benchmark / control sample + first-in-place inspection** — set and approve the real standard on the actual first installation. Everyone now has a physical reference for “right,” which ends the debate before it starts.
- **Conditions of Satisfaction / definition of done + handoff acceptance criteria** — write down exactly what the receiving trade is entitled to expect from the trade before it. A handoff without acceptance criteria is a disagreement waiting to happen.
- **Quality checklists per trade** — turn the conditions of satisfaction into a short checklist each trade signs off on its own work, so quality is built in at the wagon, not inspected in at the end.
- **First Run Studies** — video the very first cycle of a repeating task and improve the method before it sets. In a Takt phase the first cycle becomes the template for every zone after it, so a five-minute improvement multiplies across the whole line.
- **Test-before-conceal check** — flag any work that gets hidden — underground tested before backfill, in-wall tested before close-up — and confirm the test-and-accept step is sequenced before the concealment, not discovered after it.

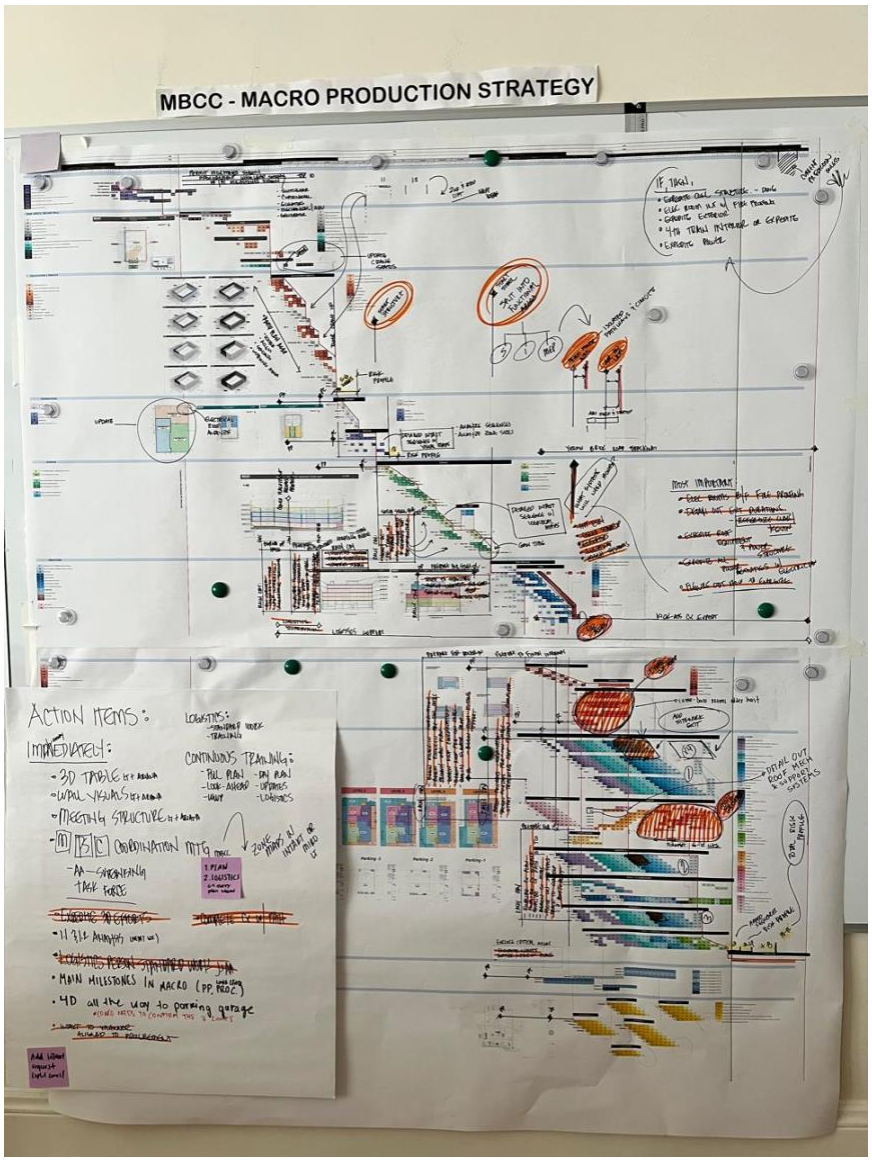


Figure 2. *The MBCC Macro Production Strategy board. The phases are laid out left to right with their zone maps; the handwritten orange and black notes are the before-phase moves layered on top — rally points for crews, "detailed intact sequence with logistical maps," risk profiles, room-kitting and pre-con campaigns, and the action items that turn the strategy into work. This is what a before-phase war room looks like.*

4.3 Crew the Train

Get the right people, at the right size, ready and committed — because a phase runs at the speed of the crews in it, not the speed on the chart.

- **Identify non-participating trades** — find the trades whose work touches the phase but who are not yet in the planning room, and pull them in before their absence becomes the bottleneck nobody owned.
- **Visit trade crews on other sites** — go watch the actual crew on another job before they reach yours. You learn their real production rate, their habits, and their readiness far better from a site visit than from a bid.

- **Verify production rates** — confirm the rates your line of balance assumes are rates the crew can actually hold, sustained, in your conditions — not a best-day number from a brochure.
- **Manpower commitment and ramp-up verification** — get a manning histogram, not just a rate. You need to know the crew can ramp to the headcount the phase requires, on the week it requires it, and hold it.
- **Trade onboarding + workable backlog** — have a trained, onboarded second crew ready to flex, and a backlog of ready work to feed it. Capacity you can call on is a buffer; capacity you have to go find is a delay.
- **Replace a foreman (if needed)** — the foreman sets the pace and the standard for the crew. If the person leading a wagon cannot hold the cadence, decide that before the phase, not three zones in.
- **Replace a trade (if needed)** — if a trade cannot demonstrate the rate or the readiness the phase needs, the time to change is before release. Swapping a trade mid-phase is far costlier than choosing differently up front.
- **Supplement (if needed)** — where one crew cannot carry the load alone, line up the supplemental manpower in advance so the reinforcement is a phone call, not a recruitment effort.
- **Assign and engage the AWP Champion and Workface Planning roles** — name the people who own the packaging discipline and the workface plans, and engage them before the phase so the system has an owner, not just a binder.
- **Involve the operations / commissioning team early** — bring the end-users and commissioning team in before the phase so the work is built toward startup, not merely toward “installed.”
- **Pre-task planning / AHA / JHA + site-specific safety orientation** — every incoming trade plans the task and the hazards and gets oriented to your site before it starts. Safety readiness is phase readiness; an injury stops the train as hard as a missing part.

4.4 Stock the Stations

Make procurement feed production. Every station down the line is stocked ahead of the train's arrival so no wagon ever waits on a material, a kit, or a fabricated assembly.

- **Procurement-feeds-production** — treat procurement as a production input, not a back-office function. Submittals approved and long-lead items ordered against the phase dates, so material arrival is pulled by the schedule rather than discovered by it.
- **Advanced kitting of materials** — pre-assembled, bagged, and staged kits per task, per location, or per work package. The crew opens a kit and works; it does not hunt, count, or stage during the cycle.
- **Room kitting** — full material placement coordinated on paper, per room or zone, with all trades together, before anything is moved. The room is loaded once, correctly, instead of restocked piecemeal by every trade in turn.

- **Prefabrication / offsite fabrication** — mod walls, MEP racks, headwalls, and similar assemblies built offsite. Confirm fab readiness, lead times, and the delivery sequence — prefab only helps the phase if it arrives in the order the wagons consume it.

4.5 Clear the Track and Set the Signals

This is the final make-ready — the countdown and the go/no-go. Every constraint in front of every wagon is removed and confirmed true before release. "Confirmed" means verified, not promised.

- **Run the constraint countdown** — work the look-ahead as a clock: materials and scaffold confirmed at five to six weeks, prior work and permits at four weeks, a full review at two to three weeks, and final validation at one week. Each constraint has a deadline to be true by, and the countdown enforces it.
- **Start tracking predecessor work complete** — begin tracking that the work in front of each wagon is finished — and that the area is punched and clean behind it. A zone that is "done" but not clean is not ready.
- **Confirm design info / RFIs answered** — every question the work depends on is answered and in hand, not open in someone's inbox.
- **Confirm submittals and shop drawings approved** — approved, not submitted. An unapproved submittal is a constraint wearing a costume.
- **Confirm predecessor EWPs and PWPs closed** — for the relevant Construction Work Package, confirm the upstream Engineering and Procurement Work Packages are closed — engineering issued, purchase orders received. Field readiness depends on the whole mini-project, not just the field portion.
- **Confirm materials on site** — physically present and verified, not in transit and not assumed.
- **Confirm equipment staged** — the equipment the work needs is on site and positioned where it will be used.
- **Stage scaffolding / access equipment** — scaffold, crane, and man-lift confirmed and staged — a step beyond "access available." Access you have to build is access you do not yet have.
- **Confirm tools, consumables, and full kit present** — the complete kit — down to the consumables — is on hand. A wagon stopped for a missing fastener costs the same as one stopped for a missing wall.
- **Confirm crew committed at the right size** — the named crew, at the headcount the line of balance assumes, is committed to the start date.
- **Confirm information, permissions, and directives in hand** — the authorizations and directives the work requires are issued and present — not pending a meeting.
- **Confirm layout / control points set** — and layout / survey control established. The crew can find its lines on day one without waiting on the surveyor.

- **Confirm space and access available** — the physical room and the route to it are clear and committed to this work for this window.
- **Confirm permits pulled** — every permit the work requires is in hand, not in process.
- **Confirm the quality standard is defined for the handoff** — the receiving condition is written down and agreed before the work starts, so “done” is a fact, not an opinion.

> **THE GO / NO-GO DISCIPLINE**
> *Treat the final week like a launch poll. Walk the constraint list for the lead wagon and call each item “go” only on verified evidence — material on site and counted, RFI answered and in hand, crew named and committed. If an item is still a promise, it is a no-go, and a no-go is a decision to fix it or to hold, never to hope.*

5. How to Do It

The catalog above is a menu, not a mandate. A simple, low-risk phase needs a handful of these moves; a complex, first-of-its-kind phase with a new trade needs most of them. The skill is matching the preparation to the risk. Here is how to actually run it.

Step 1 — Pick the phase and triage the risk

1. Choose the phase and read its risk profile from the pre-mortem and the buffer analysis. Where is this phase most likely to fail — sequence, a specific trade, a long-lead material, access, a concealed test, a startup dependency?
2. Classify the IWPs low / medium / high. The high-complexity packages and the high-risk trades are where you spend your preparation budget. Do not prepare everything equally; prepare the dangerous parts heavily and the routine parts lightly.

Step 2 — Build the countdown

Anchor the preparation to the phase start and work backward. A workable default, tightened from the constraint countdown:

1. **~12 weeks out:** confirm the route — fresh-eyes meeting, pre-mortem, 4D and page-by-page sequencing, IWP breakdown, zone density and buffer placement, multi-train design. Lock the model as the single source of truth.
2. **~8–10 weeks out:** crew the train and set procurement — verify production rates and manning, visit crews on other sites, make any foreman/trade/supplement calls, and pull the long-lead items and prefab orders against the dates.
3. **~5–6 weeks out:** materials and scaffold/access confirmed; kitting and room-kitting plans coordinated on paper with all trades.
4. **~4 weeks out:** prior work and permits confirmed; run the mockup and first-run study; set the benchmark and the conditions of satisfaction.
5. **~2–3 weeks out:** the trade pre-con meeting for the lead wagon; full constraint review; test-before-conceal sequencing checked.
6. **~1 week out:** final validation — the go/no-go poll. Every constraint verified true or the start holds.

Step 3 — Run it as a standing cadence, not an event

Before-phase planning is a campaign, not a meeting. The MBCC team ran it as a continuous-training rhythm — pull plan, look-ahead, day plan, updates, and logistics on a fixed beat — with two questions asked on every planning wagon: what is the plan, and what is the logistics? Borrow that. Put plan and logistics on the agenda every cycle, and make constraint status a visible, owned, recurring item rather than a quarterly surprise.

- Make it visible. A war-room board — the macro production strategy wall in Figure 2 — puts every phase, every prep move, and every open constraint where the team can argue about it standing up. Visibility is what turns a list into action.
- Give every item an owner and a due-true date. “Confirm materials on site” is not a task until a name and a date are attached to it.
- Track predecessor completion and area-clean-behind as living data, not a one-time check. Readiness decays; a zone confirmed ready six weeks out can be cluttered again by the time the wagon arrives.

Step 4 — Hold the line at go/no-go

The whole system is wasted if you release the phase on promises. When the countdown reaches the final week, walk the lead wagon's constraints and call each one on evidence. If it is not verifiably true, it is a no-go: you either fix it inside the buffer you placed for exactly this, or you hold the start. What you do not do is release the train and hope the station gets stocked while it is rolling — because in a Takt phase, it will not.

> **MATCH PREPARATION TO RISK**
> *Every move in this manual costs time and attention, which are finite. Spend them where the phase is most likely to fail. A routine repeat phase with a proven crew may need only the standard three plus a constraint countdown. A complex phase with a new trade, long-lead equipment, and concealed work earns the full system. Preparing the safe parts as hard as the dangerous parts is its own kind of waste.*

Appendix — The Before-Phase Checklist

A printable working checklist, grouped by workstream. Tick an item only when it is verifiably true — not promised, not ordered, true. Skip the moves a low-risk phase does not need; never skip them by accident.

FOUNDATION (ASSUMED IN PLACE)

- ☐ Pull plan complete (~3 months ahead)
- ☐ Pre-con meeting scheduled ~3 weeks before each wagon
- ☐ Look-ahead planning running on a rolling window

CONFIRM THE ROUTE

- ☐ Fresh-eyes meeting held
- ☐ Pre-mortem / risk register with mitigations and owners assigned
- ☐ 4D sequencing reviewed
- ☐ Advanced sequencing walked page by page
- ☐ Advanced visualization (foam / sand / 3D model) used
- ☐ IWPs detailed and broken down (CWP-to-IWP session held)
- ☐ IWP complexity classified (low / med / high)
- ☐ Zone map + density / leveling analysis confirmed
- ☐ Buffers placed deliberately (capacity / time / space / plan)
- ☐ Multi-train design set
- ☐ Lego sheet built
- ☐ 3D model confirmed as single source of truth
- ☐ Rules of Credit / Rules of Progress defined

SET THE STANDARD & REHEARSE

- ☐ Mockup built and reviewed
- ☐ Benchmark / control sample + first-in-place inspection done
- ☐ Conditions of Satisfaction / definition of done written and agreed
- ☐ Quality checklists per trade prepared

SET THE STANDARD & REHEARSE

- ☐ First Run Study planned (video first cycle, improve method)
- ☐ Test-before-conceal sequencing checked

CREW THE TRAIN

- ☐ Non-participating trades identified and engaged
- ☐ Trade crews visited on other sites
- ☐ Production rates verified (sustained, in your conditions)
- ☐ Manpower commitment & ramp-up verified (manning histogram)
- ☐ Trade onboarding + workable backlog ready (flex crew)
- ☐ Foreman replaced if needed
- ☐ Trade replaced if needed
- ☐ Supplemental manpower lined up if needed
- ☐ AWP Champion & Workface Planning roles assigned
- ☐ Operations / commissioning team engaged early
- ☐ Pre-task planning / AHA / JHA + safety orientation done

STOCK THE STATIONS

- ☐ Procurement aligned to production dates (submittals approved, long-lead ordered)
- ☐ Advanced kitting prepared (per task / location / package)
- ☐ Room kitting coordinated on paper with all trades
- ☐ Prefab / offsite fabrication confirmed (readiness, lead time, delivery sequence)

CLEAR THE TRACK & SET THE SIGNALS (GO / NO-GO)

- ☐ Constraint countdown running (6 / 4 / 2–3 / 1 week gates)
- ☐ Predecessor work complete + area punched/clean behind
- ☐ Design info / RFIs answered and in hand
- ☐ Submittals & shop drawings approved
- ☐ Predecessor EWPs / PWPs closed

CLEAR THE TRACK & SET THE SIGNALS (GO / NO-GO)
☐ Materials on site (verified, counted)
☐ Equipment staged and positioned
☐ Scaffolding / access equipment staged
☐ Tools, consumables, and full kit present
☐ Crew committed at the right size and start date
☐ Information, permissions, and directives in hand
☐ Layout / control points set; survey control established
☐ Space and access available and committed
☐ Permits pulled
☐ Quality standard for the handoff defined
☐ GO / NO-GO poll passed on evidence

If the first wagon rolls into the first zone and every box above that this phase needed is true, the phase will run the way it was drawn.