

# Creating a Pull-Planning Guide for Industry Use

**Michael B. Avila, AC**  
California Polytechnic Institute San Luis Obispo  
San Luis Obispo, California

The construction industry is quickly making Pull Planning sessions a commodity only the largest companies can afford due to expensive consultants and the common perception of a complicated process. Pull Planning does not need to be complicated but can be quickly implemented by all types of companies utilizing extensive research completed on The Last Planner System. The benefits of Pull Planning include creating buy-in to the plan, making hand-offs known, and creating reliability and trust from the key Players on a project. As the demand for a more productive construction project rises, it is increasingly important for the scheduling methods to stay current and be accessible to all types and sizes of contractors. This project outlines a rudimentary process, via the deliverables for a general contractor to follow to implement Pull Planning on a project at little to no cost.

**Key Words:** Pull Planning, Last Planner System, Scheduling, Productive, Planning

## Introduction

Pull Planning is a technique used within The Last Planner System in which key players on a project collaboratively start with an end milestone and work backward to a given start date. The end goal when implementing Pull Planning sessions is to create buy into the plan, make hand-offs known, and create reliability and trust from the Key Players on the project. Pull Planning generally comes to fruition as a session with a handwritten timeline on a flat surface with color-coded sticky notes indicating tasks and milestones. This can be complete at a jobsite trailer or even the tailgate on a truck. The Pull Planning Guide and supplemental brochure created by Avila is based off recommendations made by DPR Construction's Adam Frandson, an experienced scheduler and researcher in the industry who is very familiar with The Last Planner System. In addition, Avila's subject matter expert and Cal Poly Professor, Andrew Kline assisted by providing information about his experience with Pull Planning within the industry.

## Background

Traditional construction planning methods, such as push planning, solely focuses on speed and empowers project managers to be the sole planners on a project. Due to this, planning at the start of a project is replaced by control during the execution phase of the project. This has created a complicated supply chain that is vulnerable to a potential domino effect when someone on the project stumbles. A potential solution, called The Last Planner System, developed by Glenn Ballard and Greg Howell is a Lean Construction method that stabilizes the work environment by learning to make and keep commitments (Ballard and Howell 1994). Throughout the life of a project there is ultimately a planner who makes assignments that direct physical production; this person is called 'The Last Planner' (Ballard and Howell 1994). The Last Planner should not be confused with the Last Planner System, as the Last Planner is just one person or a small group of people. Pull Planning on a construction project requires a 'Last Planner', such as a project manager or superintendent. On May 1<sup>st</sup>, 2019, Kline and Avila conference called Frandson seeking further industry expertise on Pull Planning methods, benefits, and downfalls due to his role in the past as 'The Last Planner.'

## Industry Expert Interview

The conference call with Frandson investigated Pull Planning further; specific topics discussed included methods to implement Pull Planning, subcontractor's initial willingness to participate in Pull Planning sessions, subcontractor's willingness to participate after using Pull Planning for the first time, the effectiveness of Pull Planning, the best

takeaways the team had from Pull Planning, and any downfalls of Pull Planning. Frandson's responses to the topics discussed are as follows. Frandson recommended a step by step breakdown of Pull Planning that includes a sticky note layout that can be easily followed to get a team's feet off the ground. It is important to note that each project is different, and the applications of Pull Planning can be modified to best suit a specific project. Frandson also found in his experience that subcontractors were much more willing to participate in Pull Planning sessions if they had been exposed to the process in the past. Their initial motivation to participate is much lower than their final willingness to participate. The largest benefits emphasized was the reliability and trust created between the main players, the project management team, and the key players, the Subcontractors, and Foreman. Pull Planning creates widespread understanding and buy-in on the general contractor's plan. One of the largest downfalls, in Frandson's experience, is that people show up to Pull Planning Sessions unprepared. A second downfall is how difficult it is to Pull Plan work across multiple areas, such as floors of a building because Pull Planning doesn't create a continuous flow. A large emphasis that was mentioned multiple times throughout the phone call was that with Pull Planning may not necessarily speed the project up, but it does create a collaborative environment where everyone on the project understands the gameplan which ends up leading to a more resolute plan.

## **Deliverables**

The deliverables required for a successful Pull Planning Guide is to first understand what Pull Planning is and the benefits the team can gain from implementing the process. In order to achieve this, a Pull Planning pamphlet has been created providing a definition of Pull Planning, common applications of the process in relation to construction, and the benefits of Pull Planning. In addition, A 6-Step Pull Planning Kickstart has been created. The steps include identifying key players, approaching main players for a meeting, sticky note layout, detail weekly tasks on sticky notes, sequence of sticky notes, and tracking percent plan complete (PPC) once implemented. Data indicates that increased productivity results from increased PPC and has the possibility to shrink project duration and improve overall cost (Ballard and Howell 1998). The Sticky Note Layout is the third deliverable which includes a recommended standard format for key players to follow.

## **Conclusion/Lessons Learned**

Pull Planning sessions shouldn't have barriers to entry such as expensive consultants or overcomplicated processes. The only barrier to entry should be the project team's willingness to implement Pull Planning Sessions on construction projects. The Pull Planning Pamphlet describes and lists benefits to entice the buy-in of a general contractor's key players. The 6-Step Pull Planning Kickstart is an easy to follow compilation created from Frandson's expertise as well as research done on the Last Planner System created by Ballard and Howell. Throughout the process of compiling information, one of the largest takeaways about Pull Planning is that it creates reliability and trust between key players and main players by holding each other accountable to their scheduling promises. It also provides the opportunity for those that are doing the work to be able to plan the work. Those people are able to create and identify the handoffs within the constraints of the job and work backward from a milestone. Collaboration as a team can take place on a weekly basis or adjusted to an as-needed basis. Instead of a general contractor only providing a schedule up front for subcontractors to follow, the subcontractors are also validating the general contractor's original plan. In the worst case scenario, the project does not move faster by implementing Pull Planning but, the plan will be made clear and everyone will know the flow of work which will increase productivity.

## **References**

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