Task-specific Methods

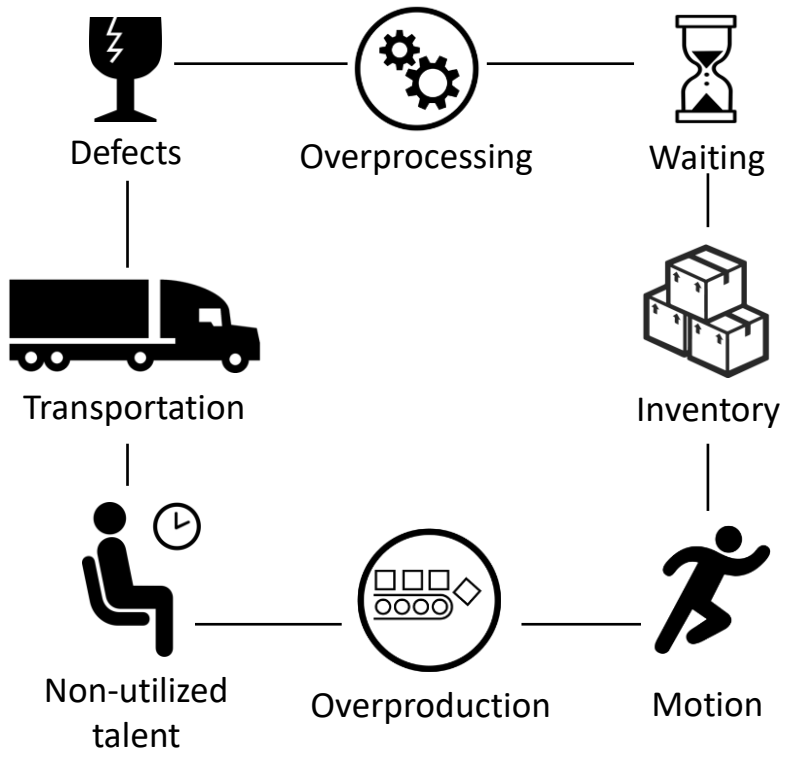
8 Wastes

Waste in Lean Construction is all those activities/entities which can be removed from the workflow stream without impacting its productivity negatively.
Identifying and eliminating waste is the starting point for continuous improvement and goes a long way in running a successful project. Once the causes of waste are understood clearly, the company can focus on optimizing their processes by eliminating waste from these processes.

Application

The idea of process improvement is to identify and remove all forms of waste from a process in order to increase efficiency, reduce cost and provide customer value. Waste is any step or action in a process that is not required to complete a process (Non-Value-Adding) successfully. When waste is removed, only the steps that are required (Value-Adding) to deliver a satisfactory product or service to the customer remain in the process.

8 Types of Waste



Process

"If your customer wouldn't pay for it, it's waste."

The overall process for identifying and removing waste is to eliminate any process, activity, or practice that does not result in more value for the customer, both internal and ultimate customers. To identify wastes, use Value Stream Mapping (VSM) and document instances of the waste in the processes, then develop a plan for eliminating or reducing them. By streamlining the entire process, the production flow can proceed without interruption.

Complementary Methods

- Value Stream Mapping (VSM)
- 5S
- Gemba Walk
- Ohno Circle
- Spaghetti Diagrams

Best Practices

- Clarify operating procedures and specifications to ensure waste-free processes.
- Reduce large batches.
- Use value stream mapping and process mapping to identify and eliminate waste.

Do

- Encourage employees to take ownership of their processes to promote involvement.
- Identify what is needed and why, then remove extra steps, efforts and processes that add no value.

Don't

- Consider the process for identifying and eliminating waste s a one-time action.
- Exclude your frontline workers and their input for process improvement.

Resources

- Book: Lean Thinking: Banish Waste and Create Wealth in Your Corporation, by Womack and Jones.
- Book: Transforming Design and Construction: Chapter on Waste

Business Drivers

- Reducing the amount of work required to perform tasks.
- More efficient business processes.
- Increasing value for customers.
- Improve competitiveness within the industry.

Benefits

- Increase productivity and efficiency.
- Improved operational performance.
- Reduce cost and increase profits.
- More satisfied customers.
- Inventory reductions.
- Increase workspace utilization.
- Reduced lead time for orders.

Attributes

	Low				High
Ease of Use	☐	■	☐	☐	☐
Investment	☐	■	☐	☐	☐
Training	☐	☐	☐	■	☐
Value	☐	☐	☐	☐	■

Standard Work

The identification of repetitive processes and activities to structure a baseline process for how to perform the identified task. The standard should consider optimizing the defined task, as well as related or complementary tasks to ensure a smooth handoff or interaction to reduce variability.

Application

To reduce variability and increase transparency work standardization provides a detailed process, inputs, tools and resources, and expected product or output.

By explaining each procedure's steps and requirements, all involved workers can understand the process, unneeded waste can be removed, and craft can have a consistent baseline for performance.

Standard Work Overview

1. **1.** Collect data and analyze your current operations
2. **2.** Ask for input from multiple sources
3. **3.** Establish/find the current best practices
4. **4.** Document everything in a visual manner
5. **5.** Provide training

Process

The first step is to establish your work sequence and Takt time. Then, by looking at the data you have collected, and notice variations, the most efficient possible way to perform a task can be identified. To find the most efficient way to run your operations, lean tools such as Value Stream Mapping (VSM) can be used to optimize work sequence and procedures. By recognizing these procedures, you can ensure that operators follow each step properly, according to the current best practice outlined by your standardized work.

Complementary Methods

- A3 Thinking
- Value Stream Mapping (VSM)
- Visual Management
- Mistake-proofing (Poke Yoke)

Best Practices

- Highly repetitive tasks such as assembly procedures are good candidates for standardization.
- Standards should reflect the current best-known method for completing a process.

Do

- Put in place the culture of continuous improvement.
- Visualize the benefits of Standard Work to encourage employees to participate in the process.
- Enables employees to provide feedback and improve the processes themselves.

Don't

- Underestimate the importance and vital role of support from leadership.
- Forget to continuously improve standards.
- Make it hard by overcomplicated revision processes and change request forms.

Resources

- eBook: The Modern Guide to Standard Work, by Dr. Rebecca Morlando.
- Book: Transforming Design and Construction: Chapter on Work Structuring.

Business Drivers

- Streamline problem-solving and process improvement.
- Ensure uniformity to certain practices.
- Simplify the training procedures for new employees.
- Lower operational costs.

Benefits

- Faster production.
- Higher quality of work.
- Happier employees.
- Increased customer satisfaction.
- Reduce variability and more predictable processes to ensure outcomes are near identical every time.
- Improve continuous improvement.

Attributes

	Low				High
Ease of Use	☐	☐	☐	■	☐
Investment	☐	☐	☐	■	☐
Training	☐	☐	■	☐	☐
Value	☐	☐	☐	■	☐

5S

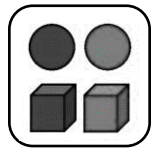
5 S is an abbreviation for Sort, Set-in-order, Shine, Standardize, and Sustain (or in the original Japanese - Seiri, Seiso, Seiton, Seiketsu and Shitsuke).
This is a process for waste removal from the workplace through the use of visual controls.

Application

The use of 5S is a process that lets anyone improve efficiency and make a task repeatable through defining and organizing the supporting space or resources. This method helps organize the workspace, in a clean, efficient and safe manner, in order to achieve a productive work environment. 5S is used to first differentiate required items from undesirable items and then to remove the unwanted materials and tools that should be stored through organizing and labeling.

5S Overview

Sort



Remove unnecessary tools and keep essential items.

Set in Order

Arrange and label necessary items and equipment for easy use and return by anyone.

Shine

Keep work areas and equipment clean to reduce waste.

Standardize

Define rules to keep everything clean & organized.

Sustain

Making the habit of maintain previous steps.

Process

In 5S, Sort is the first step in implementation, which is organizing the pieces so needless items, redundancies, and hazards can be sorted from the work area. Once Sort is complete, Set-in-order is the task of setting out the precise, formal components or tools in the order they are used. Shine refers to the critical cleaning and basic maintenance duties workers incorporate into their daily routines. Standardize is adding formal elements to make it easy to maintain the system. Sustain is the process of continuing the system.

Complementary Methods

- 8 Waste
- Visual Management
- Work Standardization
- Gemba Walk
- POKA-YOKE

Best Practices

- Storing items based on their function and labeling them to simplify their easy retrieval.
- Use an organized workspace to reduce waste and searching time for equipment.
- Place visual signs through the work area.

Do

- Identify the use-frequency of items or equipment.
- Implement the tagging technique.
- Store items in the accessible and controllable spots such as toolboxes, Conexus, lay down areas and storage yards.

Don't

- Postpone the checking process for oil spills, leaks, and equipment damage to the time when you need them.
- Forget to meet regularly with workers to review the 5S System.

Resources

- Book: 5s: A Visual Control System for the Workplace, by Edward Moulding

Business Drivers

- Cost and time savings.
- Increase employees' satisfaction and morale.
- Provide discipline and structure for the organization.
- Identify and eliminate waste in a workplace to maximize the smooth and efficient flow of activities.

Benefits

- Establish and maintain a clean and productive environment.
- Improved quality and safety.
- Increase the process efficiency.
- Reduce production and set-up times.
- Decrease underutilized floor space.

Attributes

	Low				High
Ease of Use	☐	☐	■	☐	☐
Investment	☐	■	☐	☐	☐
Training	☐	■	☐	☐	☐
Value	☐	☐	☐	☐	■

Kitting

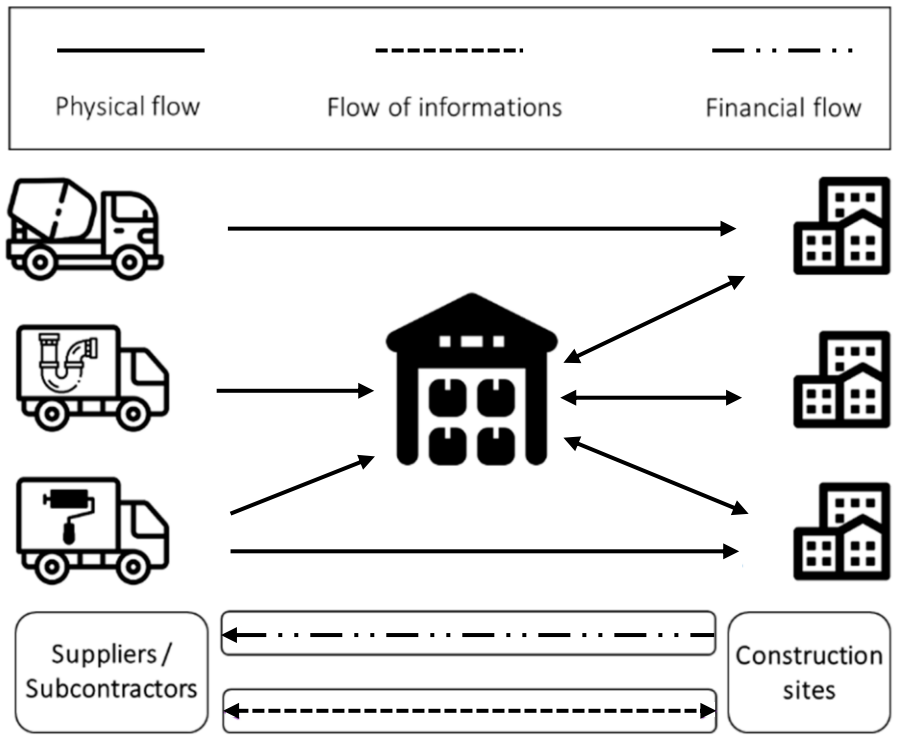
Kitting is the process of sorting, grouping, and packaging separate but related items together.
Kitting allows all of the miscellaneous pieces, parts, and components to be provided to craft workers in an organized fashion to allow them to focus on assembly, reducing the chance of getting required parts lost in the job site, contributing to decreased time of search and assembly.

Application

The application of kitting should focus on finding common tasks and standard sets of components that can be pre-sorted into convenient containers or packaging.

The kits are assembled offsite or in an onsite yard to reduce the packaging and unnecessary items from ever going to the field.

Kitting Overview



https://www.mdpi.com/2075-5309/11/3/105/htm

Process

Kitting is the process by which related groups of items are combined to comprise one single package. This combination is then assembled into a customized kit and prepared for sending to a customer, craft workers in a job site, as a one unit. The kit is a carrier, such as a box or trolley, containing the parts and consumables for a single assembly task. These kits can be placed close to the location at which they will be consumed. Thus, kitting decreases the time spent searching for parts needed in assembly operations

Complementary Methods

- Standardized Work
- 8 Waste
- Value Stream Mapping (VSM)
- Just-In-Time (JIT) deliveries

Best Practices

- It requires smooth information flow between operations.
- It requires centralized material logistics.
- Adopt kitting when implementing takt production.
- Look for ways to consolidate parts from several items into one.

Do

- Use the JIT principle to send kits to the job sites to avoid material piles, which can limit worker mobility and cause delays.
- While maintaining the standard format, customize each kit based on the project-specific requirements.

Don't

- Neglect to pay enough attention to identifying the right components for the kitting combination.

Resources

- Article: Tetik, M., Peltokorpi, A., Seppänen, O., Leväniemi, M., & Holmström, J. (2021). Kitting Logistics Solution for Improving On-Site Work Performance in Construction Projects. Journal of Construction Engineering and Management, 147(1).

Business Drivers

- Streamline the onsite assembly process.
- Less track and packaging on site.
- Increase workflow reliability and on-site labor productivity.
- Improve the workers' workplace utilization rate.
- Planning and controlling material deliveries.

Benefits

- Time savings during construction.
- Cost savings organizing materials and managing packaging.
- Increased efficiency and on-site labor productivity.
- Reduces waste and rework.
- Stabilize assembly work and increase workplace utilization.

Attributes

	Low				High
Ease of Use	■	□	□	□	□
Investment	□	□	■	□	□
Training	□	■	□	□	□
Value	□	□	□	□	■

Task / Crew Coordination Methods

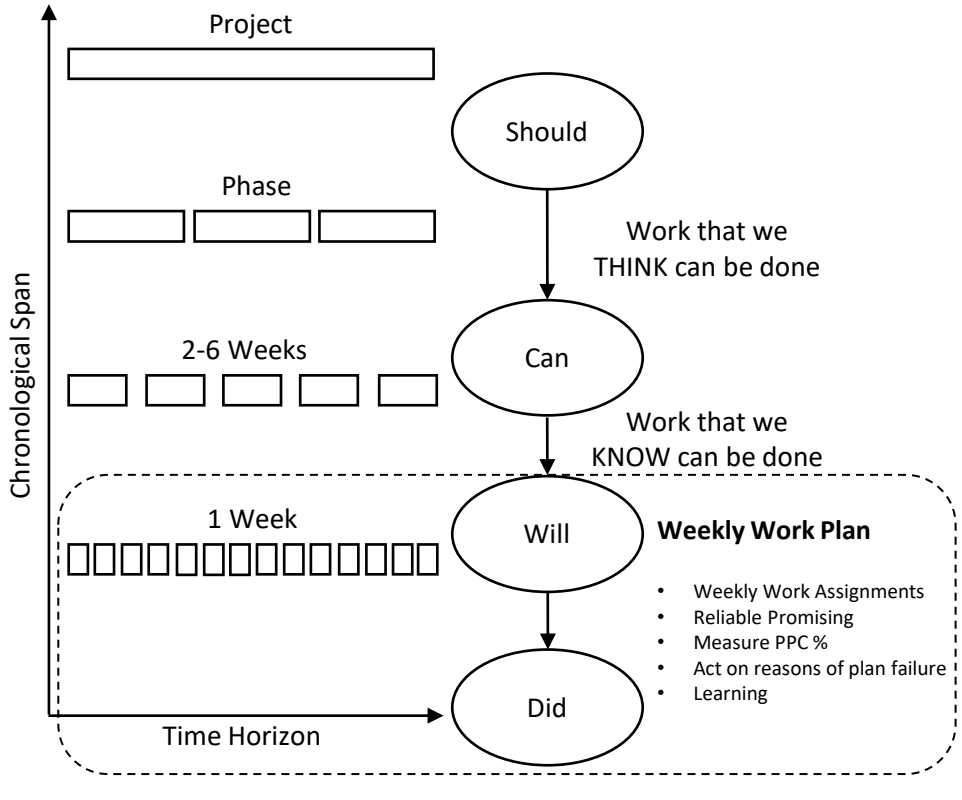
Weekly Work Planning

The Weekly Work Plan (WWP) is a collaborative agreement on the production tasks for the next day or week via weekly meetings. The WWP is based on lookahead planning and should include only quality assignments, i.e., those that are well defined, sound, in the proper sequence and sized to capacity.

Application

The WWP is formed based on the mechanism of Last Planner System (LPS), which aims to transform what SHOULD be done into what CAN be done, thus forming an inventory of ready work. The WWP meeting covers the weekly plans, safety, quality issues, resources, construction methods and any problems that occur in the field. It promotes a two-way communication and team planning to share information on the project efficiently and accurately.

Weekly Work Plan Overview



Adjusted from Ballard, 2000

Process

The WWP process starts with listing big-picture goals. Then decide what is needed to accomplish next week to meet those goals. WWP generally consists of three main parts: Overview of jobs/tasks that have been completed in the past week. Overview of jobs/tasks that need to be completed in the coming week. Analysis of the root causes for the schedule delay and associated countermeasures.

Complementary Methods

- Last Planner System (LPS)
- Visual Management
- Root Cause Analysis

Best Practices

- Establishes the set of promises from specific people for the work that will be done.
- Connect and visualize the big picture.
- Helps set priorities right, plan a time and track time spent on each task.
- Use color-coding for your visualization.

Do

- Choose a regular day and time to do it (Friday afternoon is a good day for this – you can review your weekly accomplishments and plan ahead for the next).
- Stick to the plan, reschedule the tasks that weren't completed.
- Review and optimize the plan when the priorities change.

Don't

- Over-schedule your time.
- Forget to include buffers (anticipate time for the unexpected).

Resources

- Book: Lean Deployment Planning Guide (LCI)
- Book: Transforming Design and Construction: Chapter on Last Planner System of Production Control.

Business Drivers

- Communicate progress.
- Plan the following week and make ready for the future.
- Explore and identify any interdependencies between resources, access and equipment.
- Maximize use of resources.

Benefits

- Increase productivity.
- Visualizing what should be done helps prioritize work.
- Builds commitment to program and reduces overall program period.
- Enables team to test options to improve workflow, buildability and program reduction.

Attributes

	Low				High
Ease of Use	☐	☐	☐	■	☐
Investment	☐	☐	■	☐	☐
Training	☐	☐	☐	■	☐
Value	☐	☐	☐	☐	■

Daily Huddle

The Daily Huddle is a structured meeting with the main goal of coordinating tasks or changing information for the project team on the near-term plan. The meeting is usually brief, informal, but frequent – often daily. This technique is used for communicating and for the project team's everyday meeting process to accomplish workers' involvement.

Application

The daily huddle is a short, daily meeting to convey information updates, confirm or coordinate daily tasks, and to identify and resolve issues.

Due to the short target durations, meetings are often held as ‘stand-up’ meetings to ensure quick updates. Key information such as safety concerns, important deliveries, or last-minute changes can be quickly shared with the team.

Rules for Great Daily Huddle

Process

To effectively conduct the meeting, encourage everyone to attend the daily huddle. Make this activity a daily practice to instill commitment among all employee. Using ice-breaking strategies by beginning the discussion with good news that brings a positive vibe, or a light topic that allows everyone to have a good laugh. Then, you can continue with topics related to safety, project progress, deliveries, inventories etc.

Complementary Methods

- Onboarding
- Last Planner System (LPS)
- Visual Management

Best Practices

- Use a dedicated facilitator for an effective and productive meeting.
- Focus on the How, not the Why. Try to produce solutions-based discussions instead of status-based presentations.
- Engage everyone who attends.

Do

- Keep it short and solution-oriented.
- Stick to the agenda.
- Start on time and end on time.
- Ask questions as a way that will encourage your employees to be proactive.
- Make sure participants aren’t interrupting each other.

Don’t

- Forget that the details matter.
- Use it as a venue to scold employees.
- Try to use daily huddles for problem-solving, which requires discussion and a thorough review of all options.

Resources

- Book: Beyond the Morning Huddle: HR Management for a Successful Dental Practice, by Dr. Ann Marie Gorczyca

Business Drivers

- Improve the performance and engagement of employees.
- Improve internal communication among team members to address issues on a regular basis.

Benefits

- Keeps the team connected and maintains healthy team dynamics.
- Streamlined communication makes messages be easily understood.
- Provide an open exchange of thoughts.
- Reduced interruptions and rework.

Attributes

	Low				High
Ease of Use		■			
Investment				■	
Training		■			
Value					■

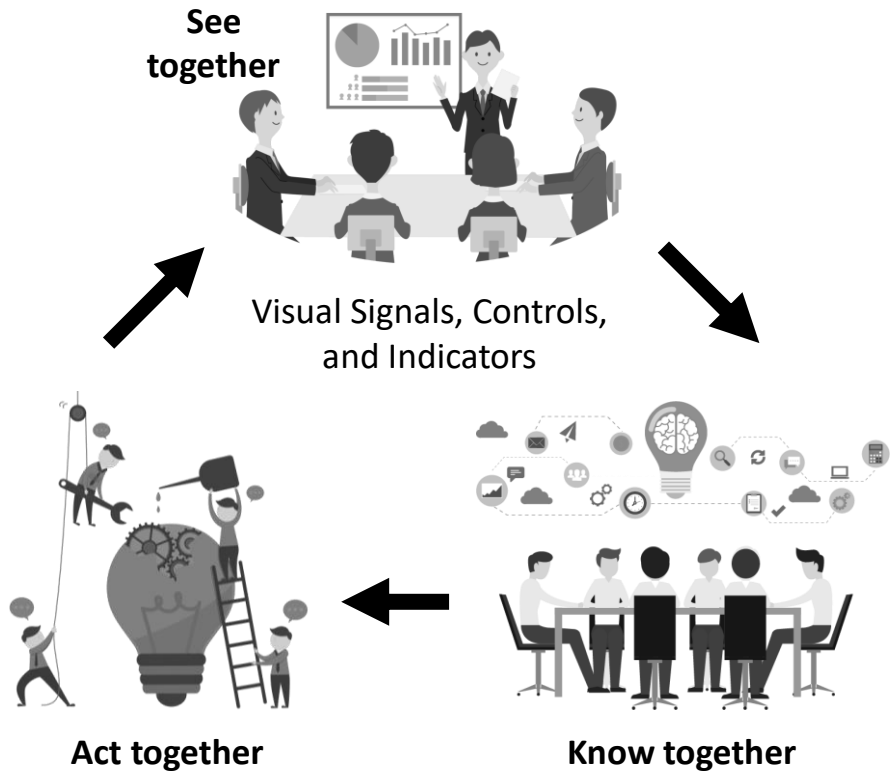
Visual Management

Visual management refers to presentation of information such that it enables everyone to recognize current status within 30 seconds. Visual management may capture information on productivity, status of deliveries, timing of events, or quality standards. The main purpose of VM is sharing information.

Application

The use of visual management supports quick assessment of task, tools, and resources to allow workers to save time. Common examples include tools organization systems to ensure all tools are accounted for and stored properly, colors to convey systems (e.g., red is hot water and blue is cold water) or providing markings or signs to shows walking paths and material flow.

How Visual Management Works



Process

"A picture is worth a thousand words."

Visual management can take several forms or topics, but it uses processes, charts, or diagrams to capture and share information. Focus on the key areas for ensuring work is progressing - production, materials, and schedule. Keep the visuals simple and take suggestions for improving them as they are used.

Complementary Methods

- 5S
- Standardized Work
- Supportive of many Lean methods

Best Practices

- Develop standard visuals across projects, so team members can easily adapt.
- Use daily huddles to update visuals.
- Use colors for consistent info (e.g., days of the week or which crew is responsible)

Do

- Visualize targets on a large screen to ensure that everyone knows what's important.
- The awareness comes with visualizing information brings clarity to the team, creating a shared path towards business goals.

Don't

- Use too many words to transfer the data.

Resources

- Book: 5 Pillars of the Visual Workplace: The Sourcebook for 5S Implementation, by Hiroyuki Hirano.
- Book: Visual Workplace/Visual Thinking, by Gwendolyn D. Galsworth.
- Book: Transforming Design and Construction: Chapter on Visual Management.

Business Drivers

- Enhance the flow of information.
- Increased transparency, resulting in self-control.
- Broadening employees' participation and creating shared ownership.
- Increase effective communication.
- Help achieve continuous improvement.

Benefits

- Common understanding
- Saving time
- Recognizing where help is needed
- Improve accountability
- Improved performance
- Provide real-time updates
- Foster problem solving

Attributes

	Low				High
Ease of Use	☐	■	☐	☐	☐
Investment	☐	■	☐	☐	☐
Training	☐	☐	■	☐	☐
Value	☐	☐	☐	☐	■

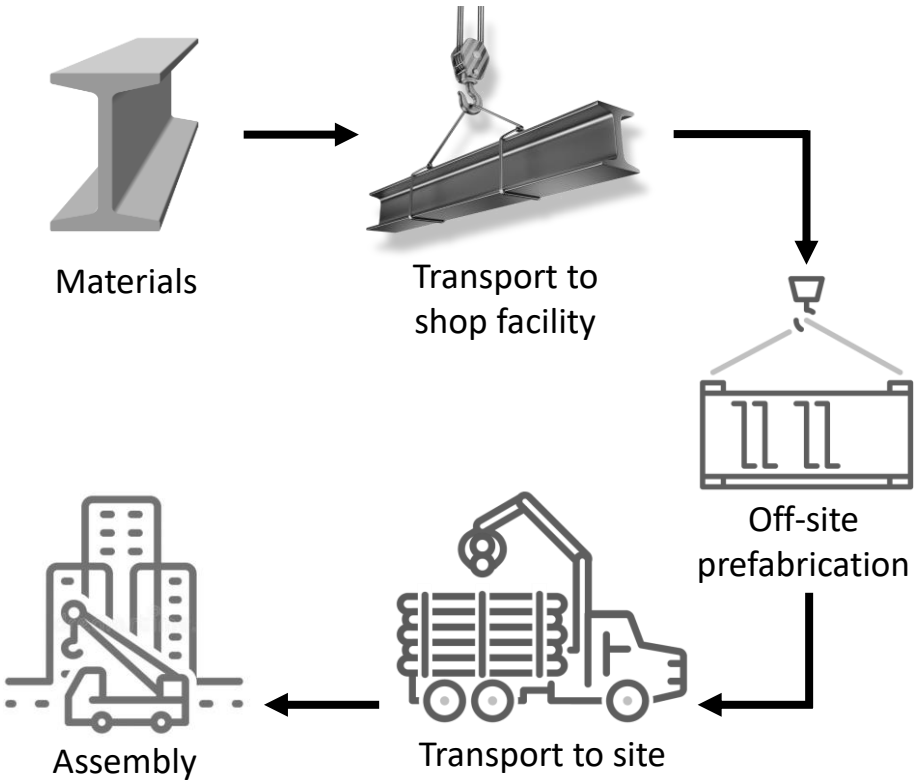
Prefabrication

Prefabrication, or “prefab,” is a lean method that uses components made off-site in a factory, which are then transported and put together on-site to create a building component.

Application

Construction companies will transport the completed unit to the final site, where they will also complete the setup and handover buildings. This process eliminates the need for traditionally sourced construction materials because off-site assembled parts result in less waste. As the raw materials are built off-site and shipped partially assembled, prefabrication reduces the cost of labor and the cost of materials.

Prefabrication Overview



Process

Prefabrication supports the field workers as internal clients. Since each project has unique constraints and needs, the specific approach to prefabricating systems, components, and assemblies need to be custom-tailored, including reducing the number of pieces a worker needs to handle for each task, grouping and carting the assemblies or parts to reduce worker time moving or finding the necessary pieces, and focusing on the enabling tasks to streamline field install.

Complementary Methods

- Modularization
- JIT
- BIM
- Kitting
- Standard Work

Best Practices

- It requires the increased level of communication and coordination in preplanning.
- It requires information to be shared in a timely manner by other trade partners.
- Use Juts-In-Time (JIT) deliveries for prefabricated units to reduce the storage space.
- Poor quality designs or last-minute changes would complicate prefabrication and hence cause reworks.
- It is more cost-effective for large projects with many repetitive units.

Do

- Use BIM to facilitate prefabrication by providing more details and reducing the chance for reworks.

Don’t

- Underestimate the importance of preplanning.
- Get involved in projects late, which reduces preplanning time for prefabrication.

Resources

- Book: Prefabricated Systems: Principles of Construction, by Ulrich Knaack, Sharon Chung-Klatte, Reinhard Hasselbach

Business Drivers

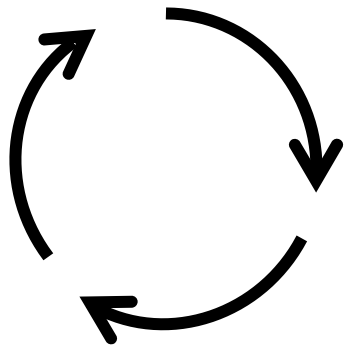
- Cost-effectiveness.
- Consistency & quality control.
- Save time, reduce lead time and accelerate construction process.
- Reduced effects of uncontrolled factors.
- Optimize work sequences.

Benefits

- Increase efficiency and work speed due to better working ergonomics.
- Improve quality and safety.
- Lower environmental impact.
- Reduced site disruption.
- Decrease jobsite congestion.
- Reduce waste.

Attributes

	Low				High
Ease of Use	☐	☐	☐	■	☐
Investment	☐	☐	☐	☐	■
Training	☐	☐	☐	■	☐
Value	☐	☐	☐	☐	■



Continuous Improvement Methods

A3 Thinking

A3 thinking is a documentation approach for problem solving and reporting on project-related critical decisions using the PDCA as a method of continuous improvement.
PDCA stands for Plan -Do -Check - Adjust. It is a method of continuous improvement that focus on a cyclic process of planning, execution, monitoring, and learning.

Application

Teams use A3s for problem-solving, establishing a single 11 x 17-inch sheet to allow the problem solver (author) to fully grasp the issue, including relevant business background information, explore the current situation, and set goals. Then, with other sections, including countermeasures, root-cause analysis, and an action plan, the author has a suitable place that helps to visualize the whole process, gain alignment with others, and sustain improvement.

A3 Template Structure

Background	**Proposed approach**
Why do we need to work on this? Context & Importance	What actions will you take? What does the improved process look like? How do you measure it?
Current Condition	**Plan**
Problem statement Document “as-is” state and capture the scale of the problem	Tracking of results Trend visual?
Goals / Target	**Follow-up**
Define the target performance or desire outcome	Actions still required Learning points to share
Root Cause Analysis	
Fishbone diagram, 5Whys, or Cause/effect diagrams (among others)	

Process

The A3 process follows the structure of the template to document the problem or opportunity, the reasons why it needs to be addressed, and presents some information to justify the root cause to be fixed (left side). On the right side, the implementation is captured and tracked to show if the proposed improvement makes an impact, using data to convey the change from the original state.

Complementary Methods

- 5 Whys Analysis
- Fishbone Diagram
- PCDA: Plan-Do-Check-Adjust
- DCAP: Detect-Correct-Analyze-Prevent
- Ohno Circle
- Quality Circle
- PICK Chart

Best Practices

- Apply in situations that are hard to define clearly.
- Use for chronic or repetitive challenges.
- Use for problems that are bigger or costlier and deserves significant attention to solve.
- Make information visual.

Do

- Ask questions, use the PDCA process.
- Practice patience with self and others.
- Start it simple, with pencil and paper or on a whiteboard.
- Engage with others, go and see the current state firsthand.

Don’t

- Fill out a template alone, skip PDCA process steps.
- Rush the process or assume others can follow a template.
- Try to use fancy software right away.
- Assume you understand based on secondhand information.

Resources

- Book: Lean Deployment Planning Guide (LCI)
- Book: Transforming Design and Construction - chapter on A3 Thinking

Business Drivers

- Communicate ideas in a simple way.
- Identify and track problems.
- Expose/analyze value to eliminate waste.
- Enhance collaboration.

Benefits

- Clear & concise reporting
- Develops problem solvers
- Easy to understand
- Supports continuous improvement
- Provides information for others with similar problems

Attributes

	Low				High
Ease of Use	☐	☐	☐	■	☐
Investment	☐	☐	■	☐	☐
Training	☐	☐	☐	■	☐
Value	☐	☐	☐	☐	■

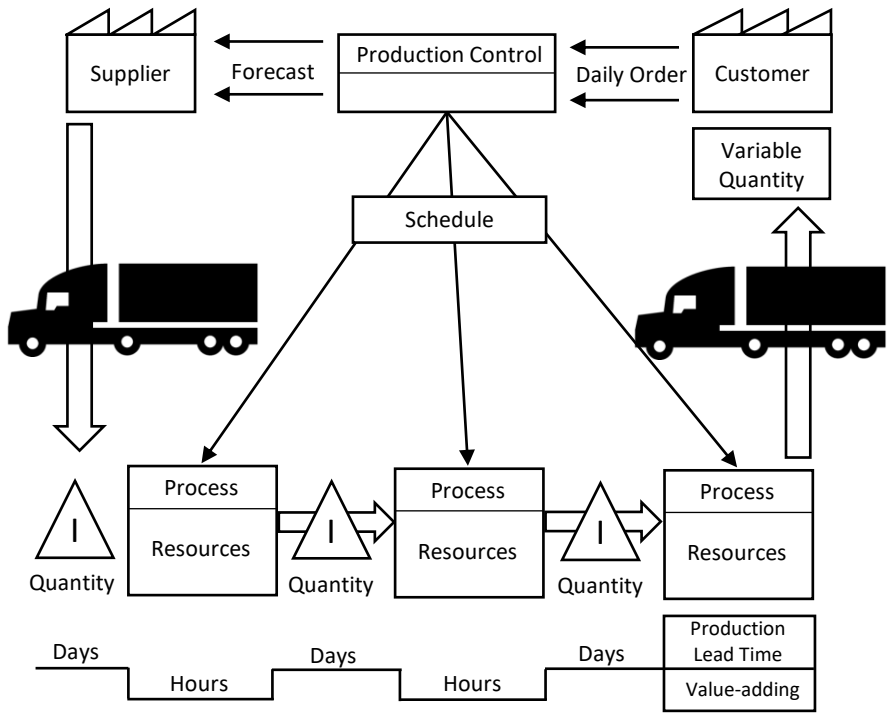
Value Stream Mapping (VSM)

A picture (map) of the entire process being studied; includes both material (product/ service) and information flows and includes both value-added and non-value-added activities. It is a tool used to identify waste within the process and identify areas of improvement. It shows values (information like the timing of steps) and numbers to show objectively where improvements can be made.

Application

A VSM is useful to define and understand the process for how materials and resources are purchased, transported, stored, used in prefabrication processes, then prepared and shipped to the site to be used or installed at the project. Understanding and documenting the full process enables the identification of waste, opportunities to enhance value, and improve the production and efficiency of the process as a whole, rather than in specific steps.

Value Stream Mapping Template



Process

The VSM starts with mapping the current state of the process from beginning to end in order to find areas that do not add value to the process and reduce those areas. By drawing the future state map, which is the optimum process free of non-value-adding activities as much as possible, the team can analyze and implement actions to achieve the future state map by eliminating waste.

Complementary Methods

- 8 Waste
- Ohno Circle
- 5 Whys Analysis
- Gemba Walk
- A3 Thinking

Best Practices

- Use to handle simple and repetitive projects or processes.
- Help decision makers to formulate and optimize project processes.
- Use for cases involving multiple functional areas or departments.

Do

- Observe the process and collect data.
- Record the time it takes to complete each step and record any spots of inefficiency.
- Document your current process as is so you can demonstrate any issues.

Don't

- Rush into an improvement plan without fully understanding the current process and identifying pinch points.

Resources

- Book: Lean Deployment Planning Guide (LCI)
- Book: Learning to See: Value Stream Mapping to Add Value and Eliminate MUDA, by Mike Rother and John Shook.
- Book: Transforming Design and Construction: Chapter on Value Stream Mapping.

Business Drivers

- Identifying and removing waste to have a consistent flow (Level workflow).
- Process efficiency and improvement.
- Identify 'pinch points'
- Supports continuous improvement.

Benefits

- Provide effective communication and collaboration.
- Provide a clear visualization of the current state of the process and where waste is occurring.
- Highlights problem areas.
- Identify opportunities for process improvement.

Attributes

	Low				High
Ease of Use	☐	☐	☐	■	☐
Investment	☐	☐	■	☐	☐
Training	☐	☐	☐	■	☐
Value	☐	☐	■	☐	☐

Gemba Walks

Lean experts encourage “going to the gemba” to see how things are really done and where there is an opportunity to eliminate or reduce waste. This usually involves a close physical or personal observation of the work. The Japanese term, Gemba, refers to the location where the work takes place.

Application

A Gemba Walk is more than an observation; but focuses on observing, understanding how work is being performed, engaging with workers to see and understand the what and why for the methods being employed, and the challenges or waste that is occurring. This engagement is intended to enable understanding the tasks and workforce needs in the direct context of the tasks being performed.

Gemba Walk in 7 Steps

https://kanbanize.com/lean-management/improvement/gemba-walk

Process

This method helps you understand the process you are going to observe in a better way. When you perform a Gemba walk, you need to looking for any problems or possible improvement actions in an established process of your work. Then, by recognizing the root cause of the problem, and applying lean tools such as 5 Whys or PDCA, you can identify and remove waste from your processes.

Complementary Methods

- Visual Management
- First Run Studies
- 8 Waste
- Value Stream Mapping
- 5 Whys Analysis
- PDCA

Best Practices

- Use to identify wasteful practices .
- Focus on specific parts of your value-creation process and assess it from start to finish.
- Observe and seek to gain understanding while leaving all assumptions at the office.

Do

- Prepare a list of questions you are going to ask.
- Focus on the process, not on people.
- Explain the purpose of Gemba Walk for your team so that they feel more comfortable and willing to collaborate.

Don’t

- Make suggestions during the walk.
- Forget to share with the team what you have learned or seen, inform them about the upcoming changes and why they are necessary.

Resources

- Book: How to Do a Gemba Walk: Coaching Gemba Walkers, by Michael Bremer

Business Drivers

- Improve communication
- Streamline problem-solving.
- Identify waste in the workplace and processes
- Cost and time savings

Benefits

- Building stable relationships with those who do the work and create value.
- Identifying problems and taking actions for achieving continuous improvement.
- Clearly communicating goals and objectives leading to increased employee engagement.

Attributes

	Low				High
Ease of Use	☐	☐	■	☐	☐
Investment	☐	☐	■	☐	☐
Training	☐	■	☐	☐	☐
Value	☐	☐	☐	☐	■

5 Whys

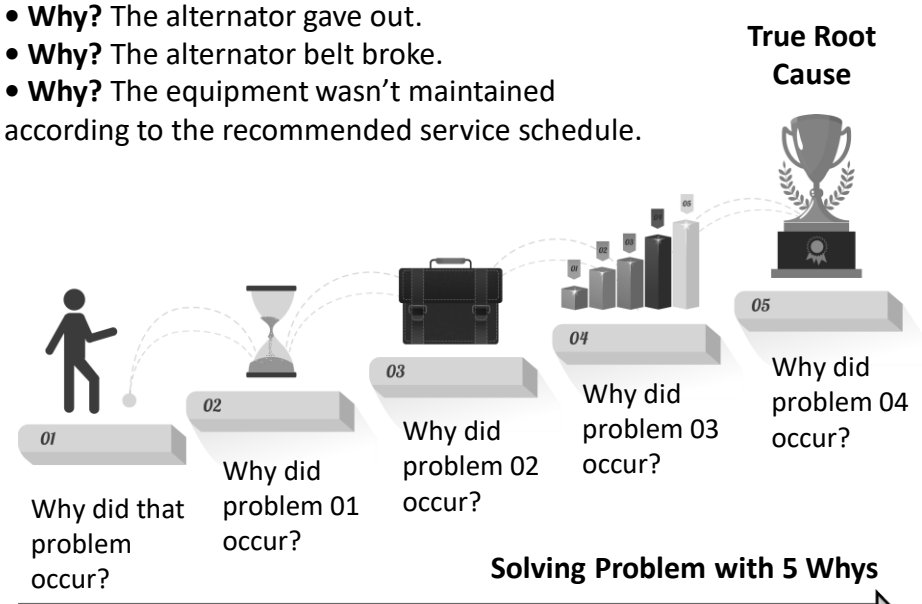
The problem-solving technique is used to dig for the root cause of a condition by asking “why?” at least five times. As each answer to the why question is answered, the next “why” is asked in a continuous cycle until the base problem is found.

Application

The 5 Whys technique helps to determine the root cause of a problem, such as delays in the schedule. To support continuous improvement, when problems are discovered, they should not simply be fixed but the reason(s) for the problem should be figured out and resolved so the problem does not happen again. By understanding the root cause of an issue, the team can uncover processes that are not working correctly, where planning was insufficient, or if different resources or tools are needed to perform a task more effectively.

5 Whys Problem-solving

- **Why we are behind schedule?** The excavator broke down.
- **Why?** The battery was dead.
- **Why?** The alternator gave out.
- **Why?** The alternator belt broke.
- **Why?** The equipment wasn’t maintained according to the recommended service schedule.



Process

The 5 Whys method follows a very simple process. First, invite people who are familiar with the issue and the process you are trying to fix to the meeting. Select a facilitator to lead the discussion, ask the 5 Whys, and keep the team focused on the issue at hand. Discuss the problem with your team, and then focus on creating a clear and concise problem statement. Ask why as many times as needed until the team identifies the root cause of the initial problem. By identifying one true root cause, discuss what countermeasures can be taken to prevent the issue from happening again.

Complementary Methods

Supportive of many lean methods, such as:

- Gemba Walk
- Ohno Circle
- A3 Thinking

Best Practices

- It is most effective when used to solve simple to moderately challenging issues.
- With complex problems, there are often multiple causes.
- The success of the method relies on the skill of the facilitator and the people involved.

Do

- Include people with practical experience on the issue.
- Use paper or whiteboard instead of computers.
- Write down the problem and make sure that all people understand it.
- Pay attention to the logic of cause-and-effect relationship.

Don’t

- Forget that not all problems have a single root cause. If you want to uncover multiple root causes, the method must be repeated asking a different sequence of questions each time.

Resources

- Book: 5 WHYS: one of the simplest and fastest problem-solving ways to get to the root of the problem, by Majed F Rajeh.

Business Drivers

- Help detect and eliminate organizational issues.
- Identify the underlying cause of a problem.
- Help to identify a sustainable, incremental solution to resolve the issue.

Benefits

- Enhance team morale among employees.
- Help avoid iteration of failures.
- Encourages team members to share ideas for continuous improvement.

Attributes

	Low				High
Ease of Use	■	□	□	□	□
Investment	□	■	□	□	□
Training	□	■	□	□	□
Value	□	□	■	□	□