



Lean Construction Institute
Immersive Education Program

5S In Lean Construction

Michael Cloud

October 18, 2022

*“LCI would like to acknowledge and thank **David MacKay**, Milestone Lean Consulting, **Eric Lusic**, Aecon, Lynx Lean Services and **Annmarie Thurnquist**, Jacobs for their leadership, work and collaboration to create this workshop. Learning opportunities like this exist because people like them engage to create them.”*

-Kristin Hill

LCI, Director Education Programs

LCI Course:
5S in Construction
4 CEU

Sign the sign-in sheet for credit



**Approved
Continuing
Education**

Learning Objectives



Understand and be able to identify the 5Ss supported by real project examples.



Understand how to implement key Lean approaches to support sustaining 5S on a jobsite.



Identify areas in your work that would benefit from 5S application.



Discover ways to build consensus and support for 5S with your team.

Rules of Engagement



This is a safe zone



Everyone has equal status



Speak up and share your ideas



Actively listen to others



One conversation at a time



Use E.L.M.O.



Silence phones



Be focused and engaged



Stay on time



Have fun!

Discussion Question

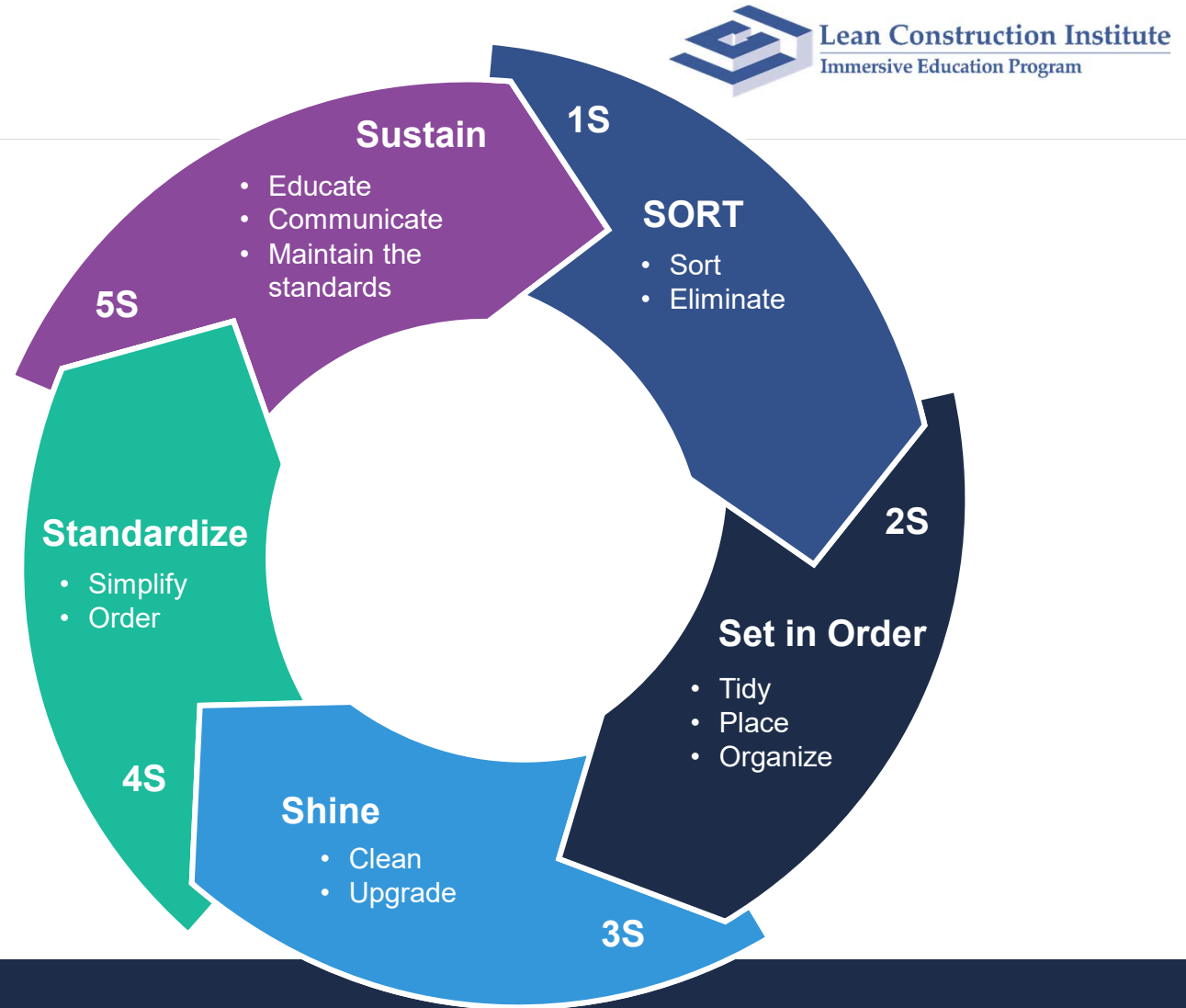
Why do our projects fall victim to the Friday cleanup?

What are challenges do you have with the way our workplaces, materials, and equipment are organized on site?

5S Program

Clean it up - Make it Visual

5S is a series of activities for eliminating wastes that contribute to errors, defects and injuries.



5S is Foundational to Lean

5S helps to improve the efficiency of work flow by eliminating waste.

The goal of Lean is to build better, faster, safer, cheaper.

It may seem counterintuitive, but we don't get there by working harder or faster.

We do it by thinking Lean.



5S Makes Us Better

Safety

A clean, organized site is a safer site.

Quality

A clean, organized workplace lets people focus on their work.

Productivity

A clean organized workplace supports more time getting things done and less time doing work arounds.

Schedule

A clean, organized workplace improves predictability.

5S in the Field Makes a Difference

*“Just little things
like that... save you
so much time. It is
amazing.”*

Efron with KHS&S (Framing
and Drywall)
Roberts Pavilion, Claremont
McKenna Colleges (PCL)



5S Numbers Game – Round 1

This sheet represents our current workplace.

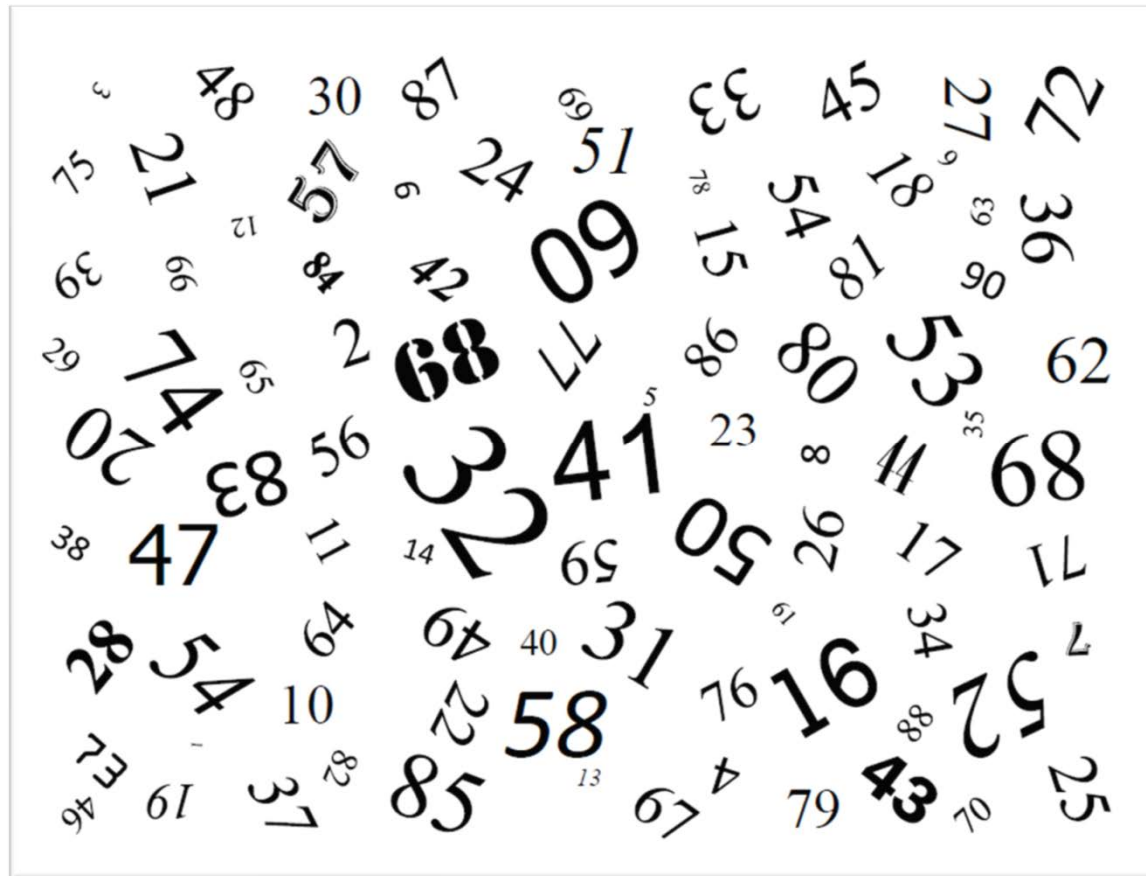
Our job during a 20 second shift is to locate numbers 1 to 49 in numerical sequence.

For example: 1 2 3

When I say “Go”, start looking.



Please keep your sheets face down



5S Numbers Game – Round 2

What was the highest score?

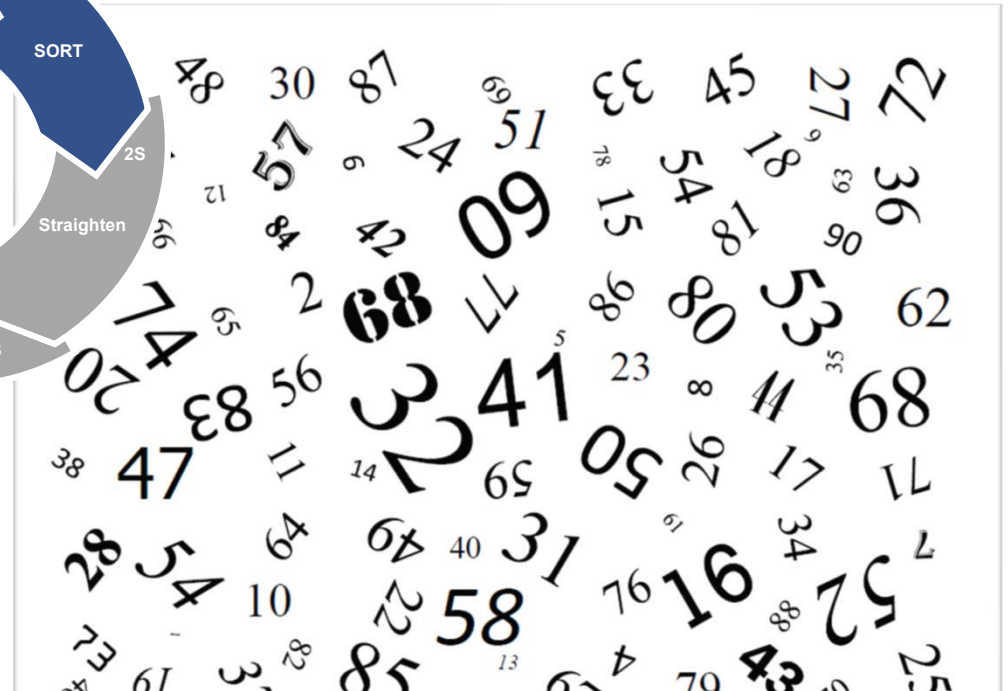
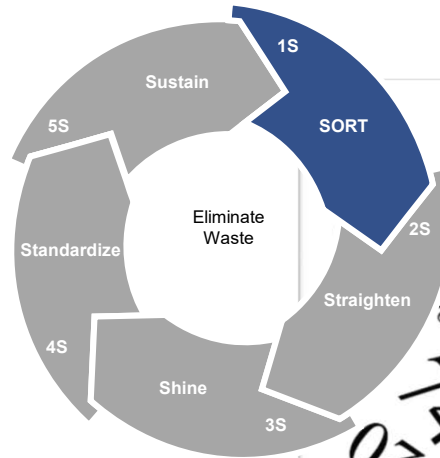
Lowest score?

Are you happy?

Let's *implement 5S* in this area!

We have removed all the numbers from 50-90 which are not needed.

Let's try again, 20 seconds, same rules...



How did this go?

Play – Round 2

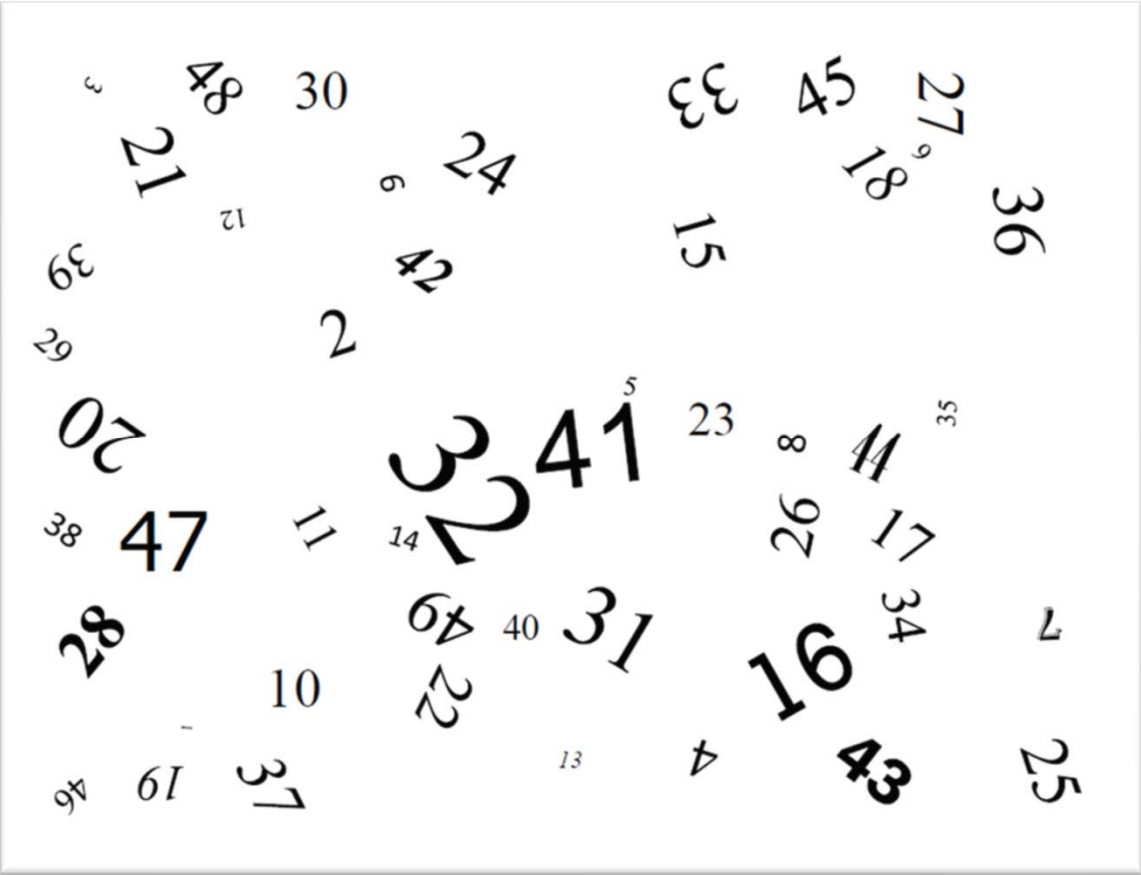
20

15

10

5

STOP!



5S Numbers Game – Round 3

What was the highest score?

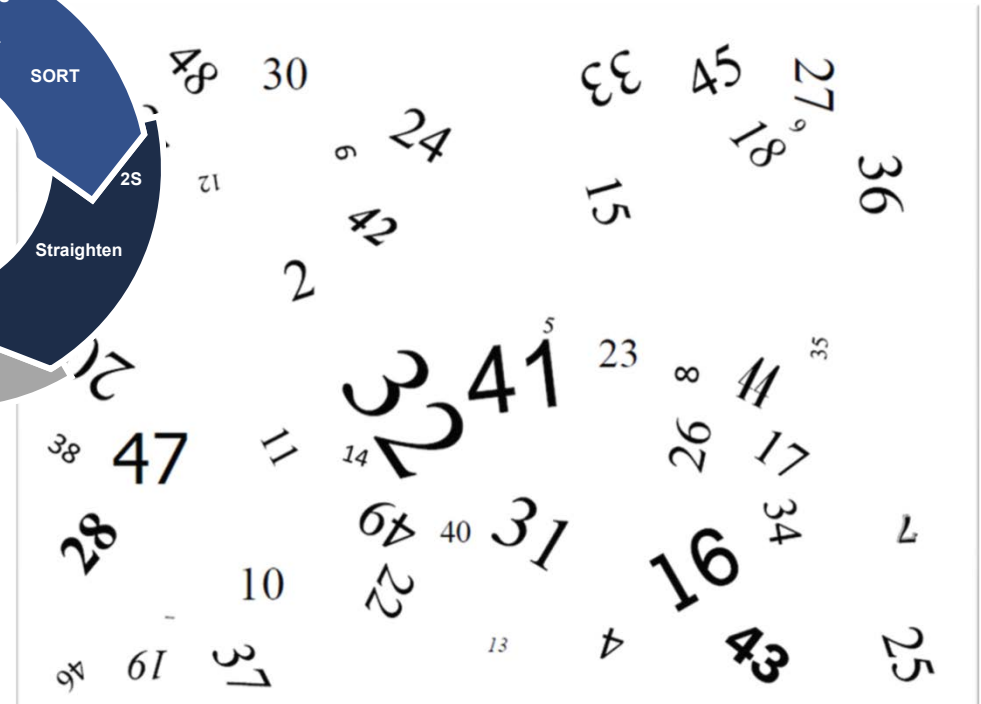
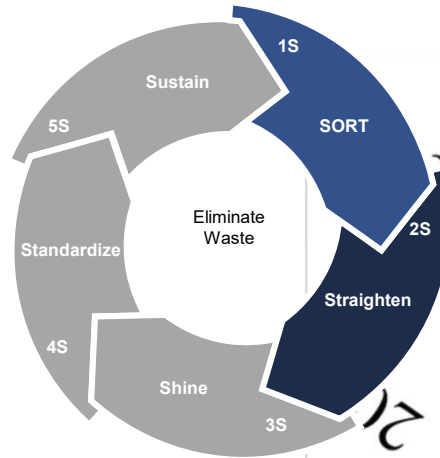
Lowest score?

Are the results better?

Let's keep going.

We have installed some racking and organized our numbers with “1” in bottom left, “2” above it.

Let's try again, 20 seconds, same rules...



Are the results better this time?

Play – Round 3

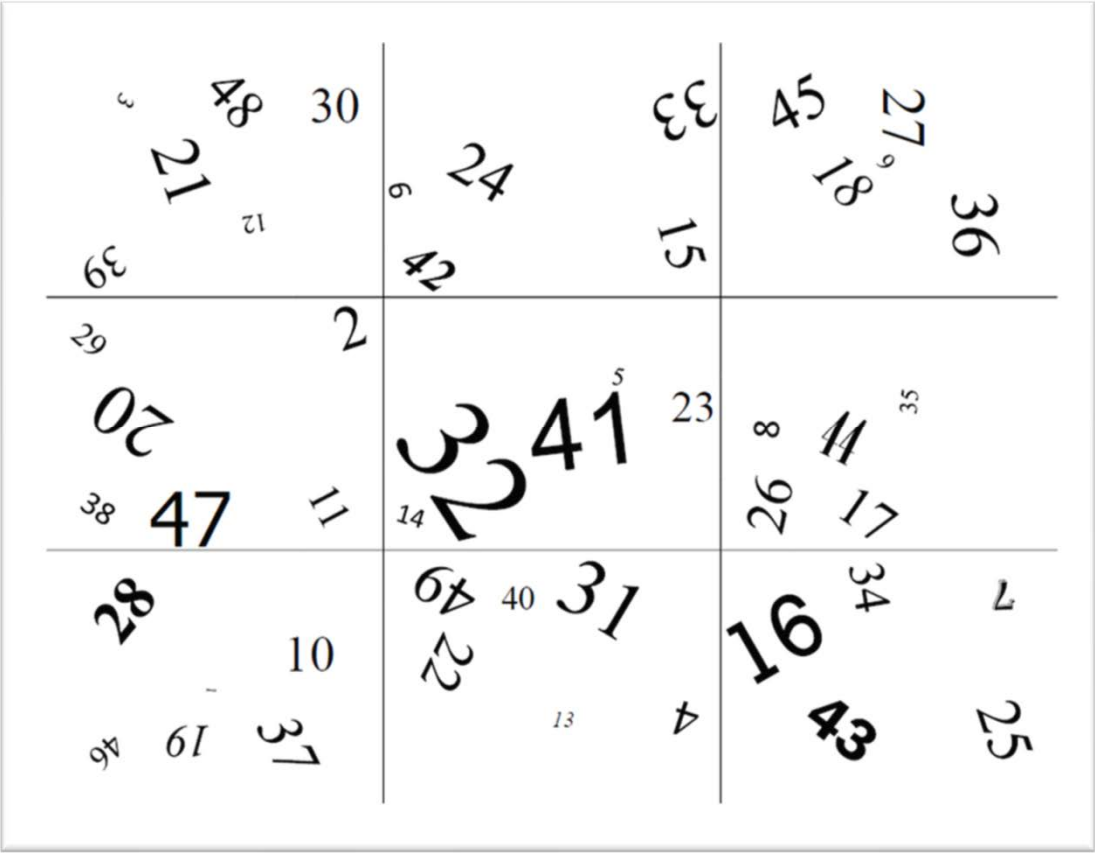
20

15

10

5

STOP!



5S Numbers Game – Round 4

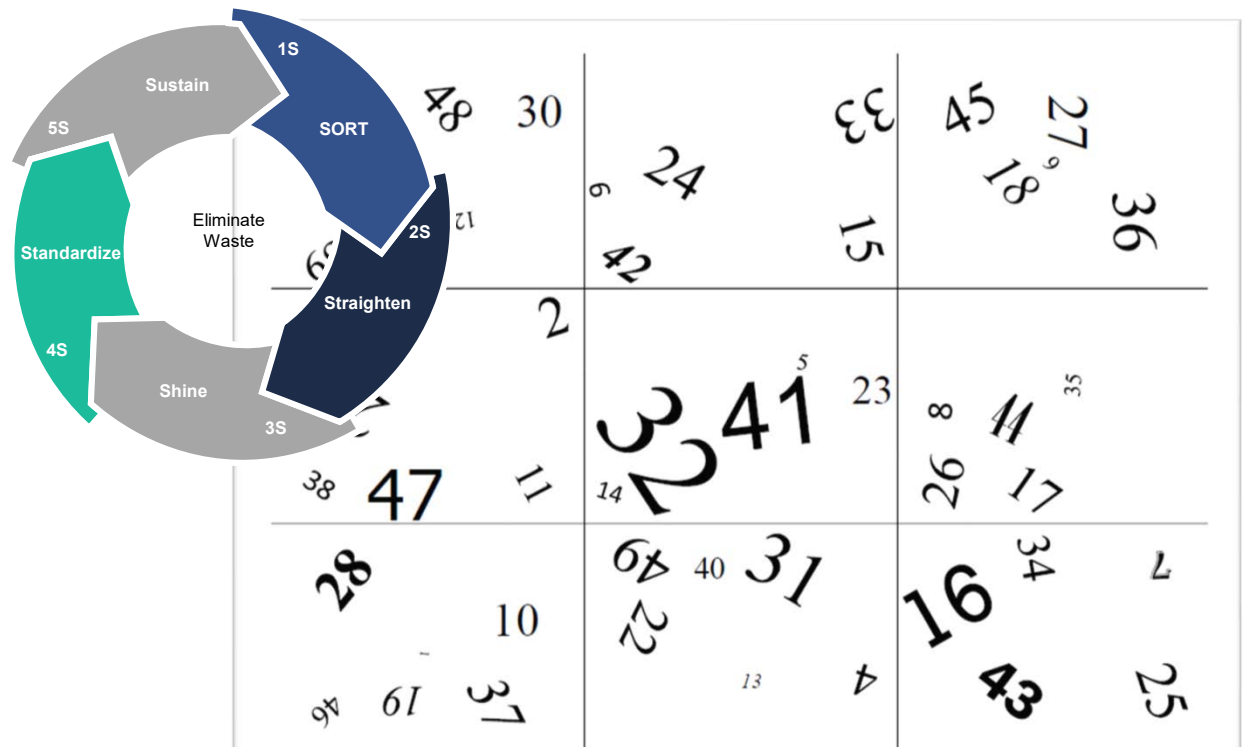
What is the highest score?

Lowest score?

Shall we keep going?

Reorganize the numbers in a standard way that makes it easy as possible.

Let's try again, ready...



Was the improvement worth it?

Play – Round 4

20

15

10

5

STOP!

Numbers from 1 to 49

¹	2	³	4	⁵	6	⁷	8	⁹	10
11	12	¹³	14	15	16	17	<i>18</i>	<i>19</i>	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	³⁵	36	37	38	39	40
41	<i>42</i>	43	44	45	46	47	48	49	

5S Numbers Game – Round 5

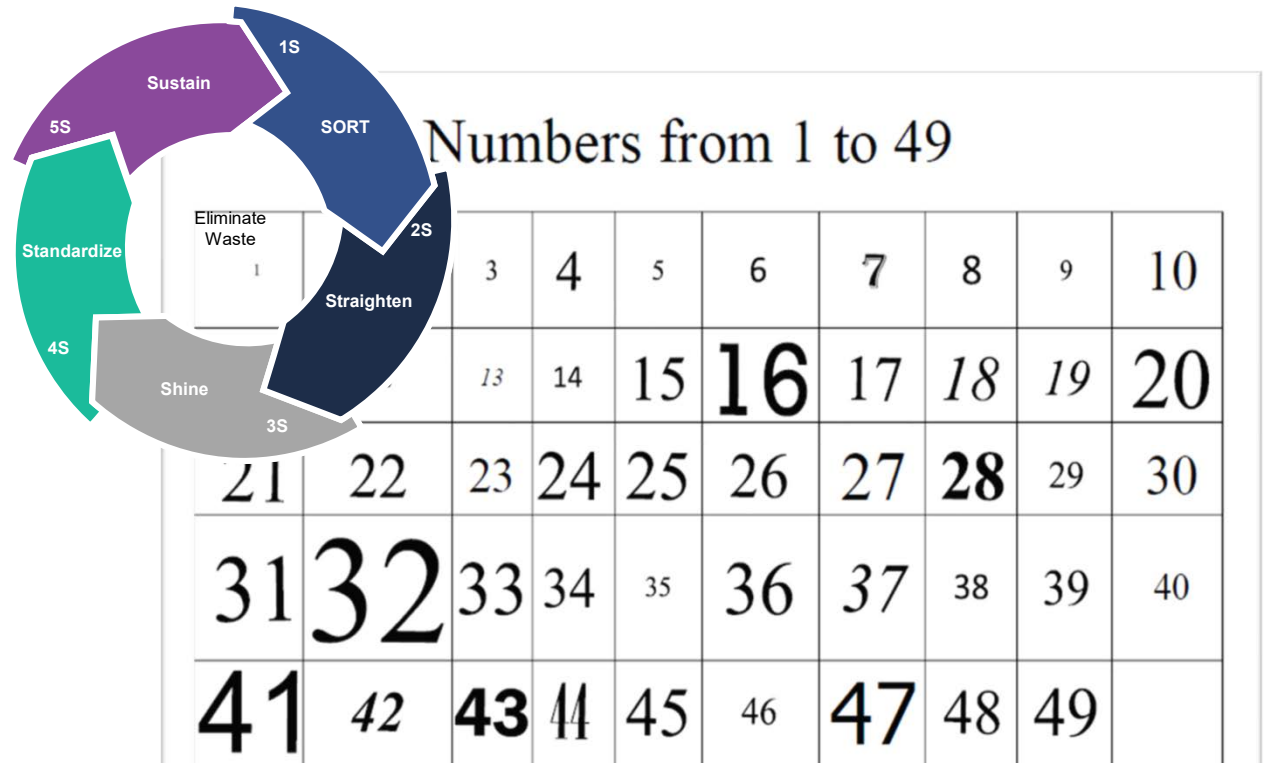
Highest score?

Lowest score?

Something else to consider...

Find the missing numbers

Let's try again, ready...

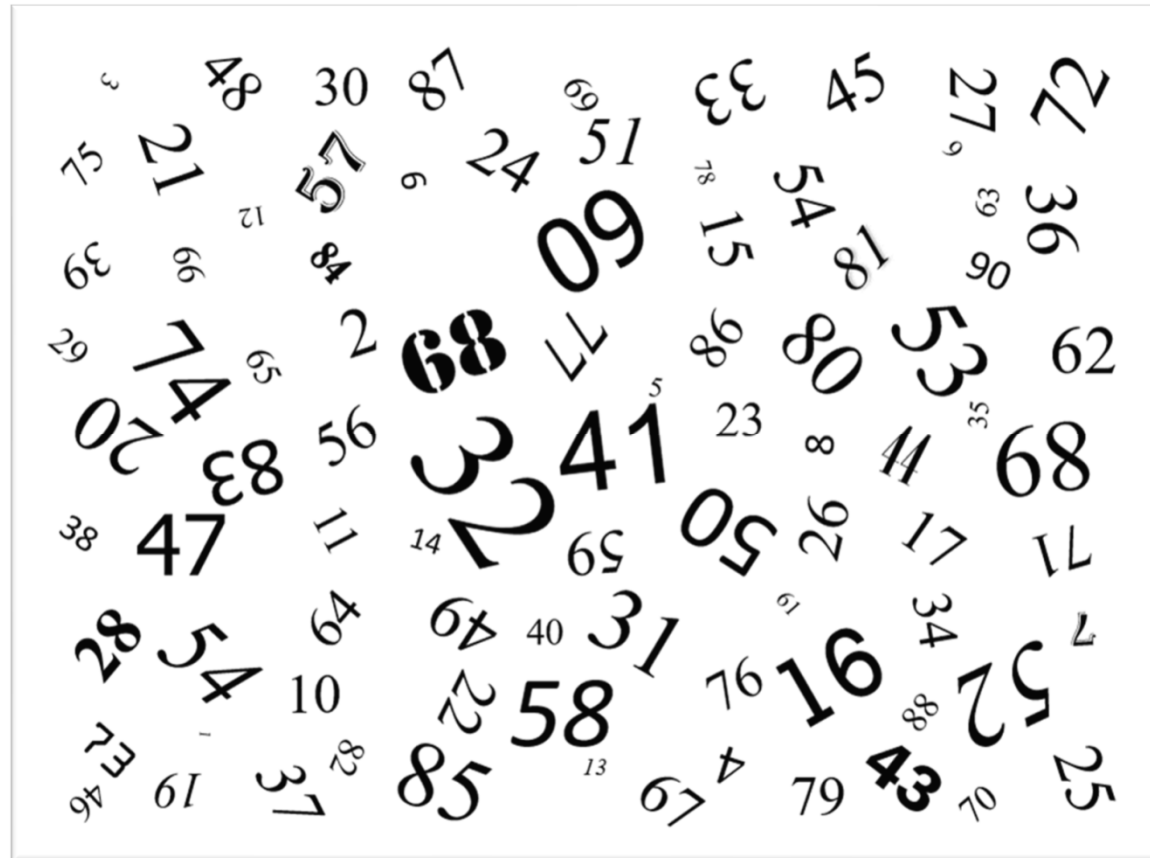


Why don't we always work this way?

15

10

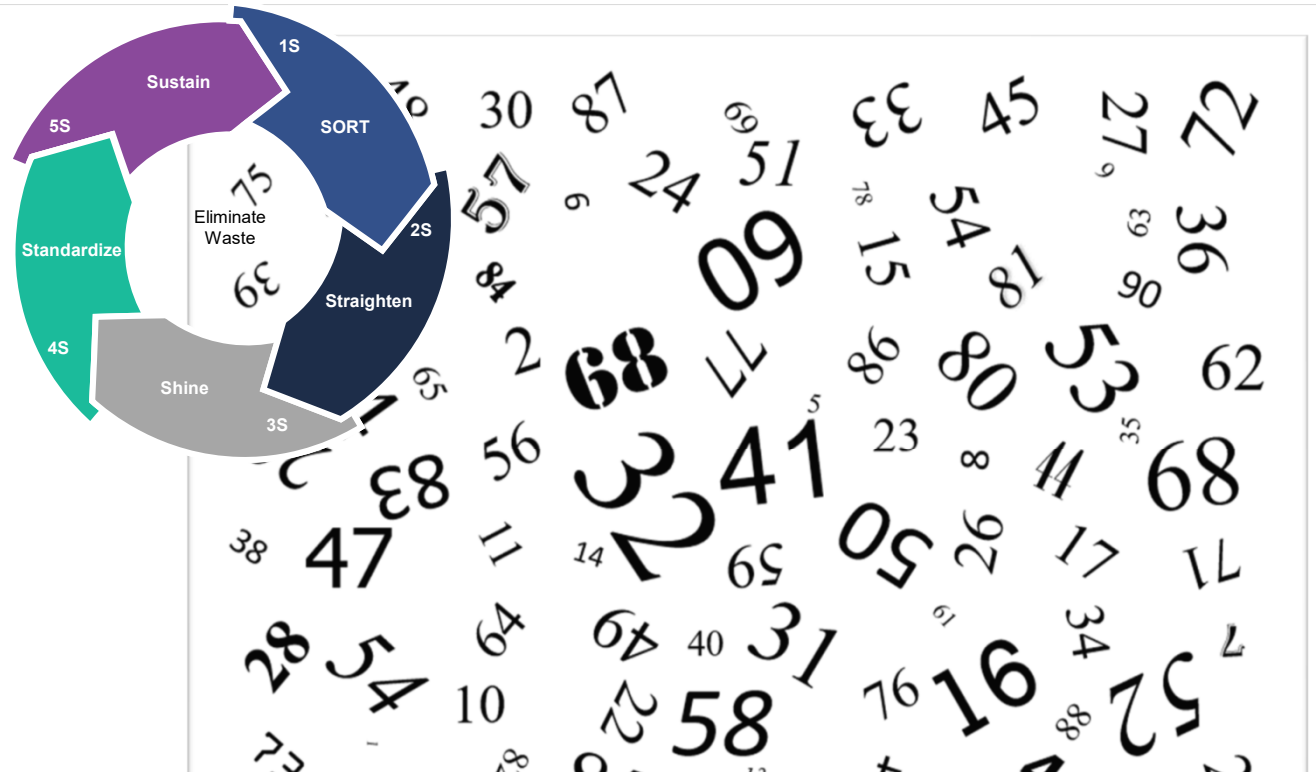
5



5S Numbers Game – Round 6

What were the numbers?

One more time,
but let's do it the right way.
Ready...



What is the effect on quality, productivity & cost?

Play – Round 6

20

STOP!

15

10

5

Numbers from 1 to 49									
1	2	3	4	5	6	7	8		10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32		34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	

How long did that take?

This is what 5S is all about.

Let's clean up...



Why Don't we always work this way?

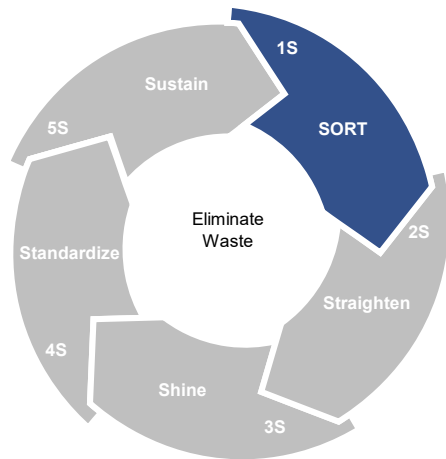
5S Defined: Sort

1S Sort:

Eliminate that which is not needed.



Why Sort



Determine what is needed and remove everything else.

Why?

If you don't need it... It is waste and workplace clutter.

Less clutter equals fewer hazards.

It takes effort and costs money to store unused items.

It gets in the way of what you really want.

Done-Done = Gone-Gone



5S Defined: Set in Order

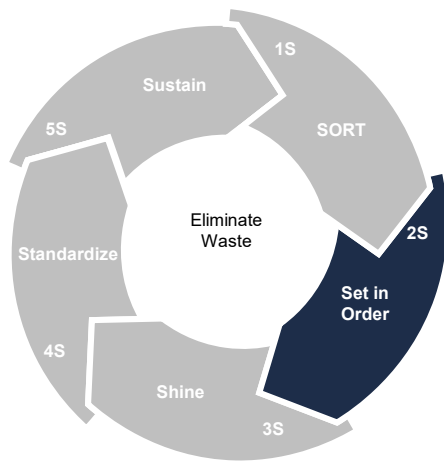
2S Set in Order:

Organize what remains after sorting.

(Orderliness)



Why Set in Order



Set in order... a place for everything and keep it there.

Why?

Reduce waste from excess motion and open up space that can be used for other things.



Gordie Howe International Bridge



5S at SaskTel project, Regina

5S Defined: Shine

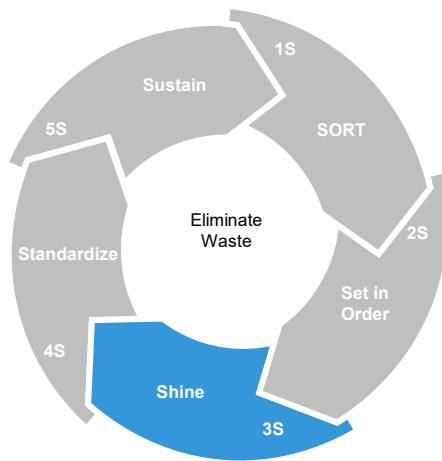
3S Shine:

Clean and inspect the work area.

(Cleanliness)



Why Shine



Clean and keep it clean ...all the time

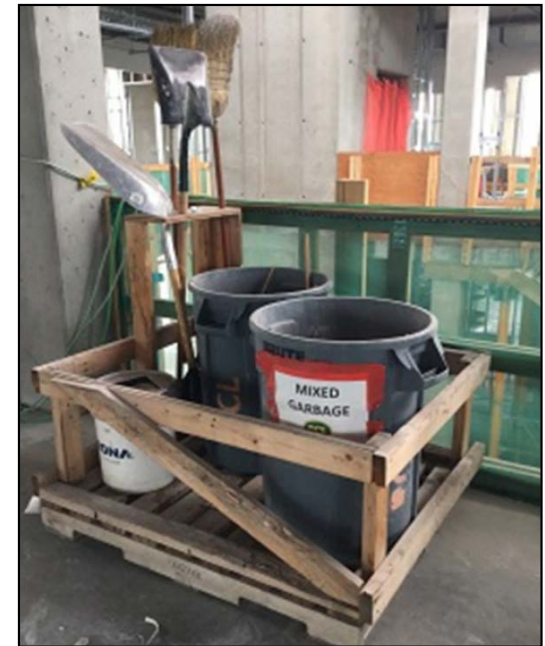
Why?

Clean as you go is more efficient than clean up afterwards.

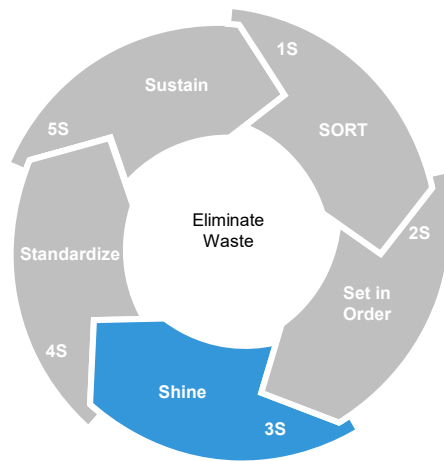
It is safer to work in a clean environment.

Prevent dirt and debris in the first place.

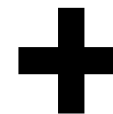
Keep tools and machinery in good repair.



5S: Shine



What will this look like in 5 minutes?



5S Defined: Standardize

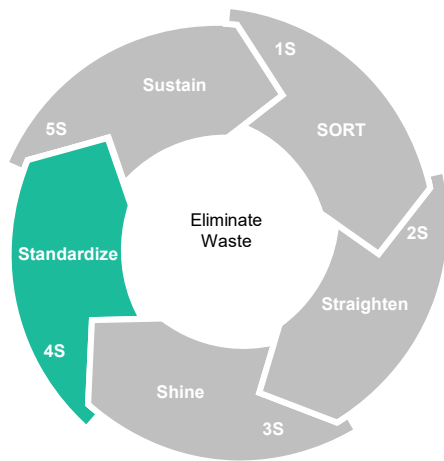
4S Standardize:

Develop system and procedures to maintain and monitor the first 3S's.

(Create standards)



Why Standardize



Create standard ways to stay organized and clean.

Why?

So the work can be repeated and improved without wasted effort.

Everything becomes easier to maintain, train, support, buy and replace.

Reduces burden, confusion and wasted time. Creates a platform for innovation.

To standardize is to simplify.
What are your thoughts?

How is standardization a platform for innovation?



5S Defined: Sustain

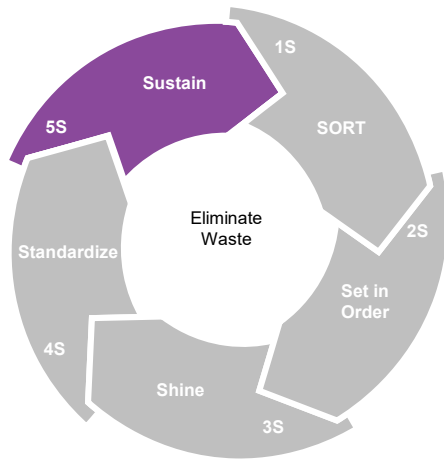
5S Sustain:

Maintain a stabilized workplace through continuous improvement.

(Self-discipline)



5S: Sustain

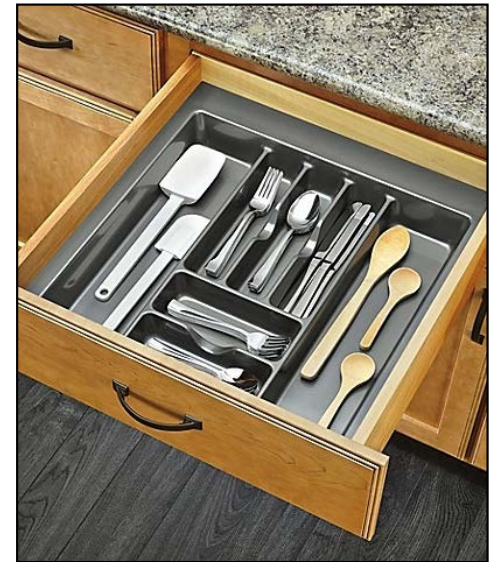


Self-discipline to keep it going.

Why?

To continue the benefits of 5S:

- Have someone be responsible for it.
- Have a process in place to keep it going.
- Make the workplace visual, easy to see when something is out of place.



5S Review

1S Sort:

Eliminate that which is not needed.

2S Set in Order: (Orderliness)

Organize what remains after sorting.

3S Shine: (Cleanliness)

Clean and inspect the work area.

4S Standardize: (Create Standards)

Develop system and procedures to maintain and monitor the first 3S's.

5S Sustain: (Self-discipline)

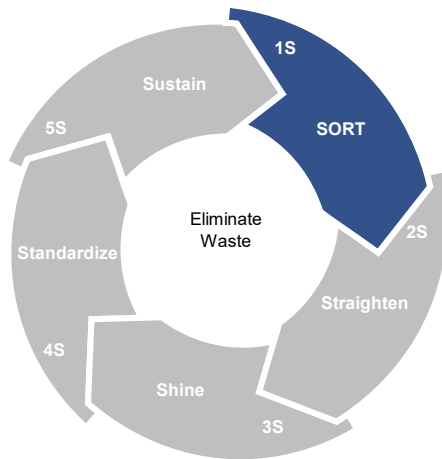
Maintain a stabilized workplace through continuous improvement.



Implementing Each 'S'



Implementing Sort

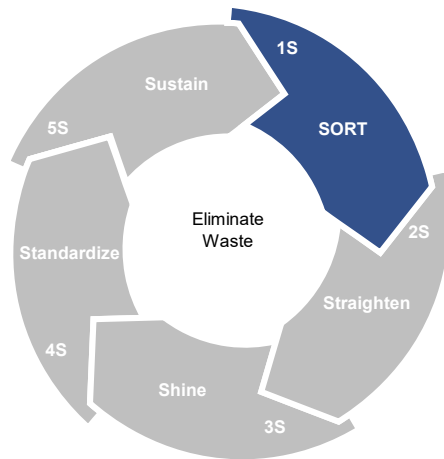


Separate necessary items from unnecessary items.

Sort into 4 Categories:

1. Items needed in the specific work area.
2. Items need in another work area. (Misplaced items).
3. Items that may be need. “Red Tag” items that you are unsure about, move to an area for holding and decision.
4. Items that are not needed.

5S in the Field: Sort



Just-in-time (JIT) Deliveries

Only what is needed on site
Remove when complete:

- Perfect for commodities and reliable suppliers
- If space is tight consider off-site
- Expect resistance at first
- Use buffers as needed, don't delay construction, be reasonable

Less stuff means less waste of space, movement, searching, hazards, damage.

5S in the Field: Sort

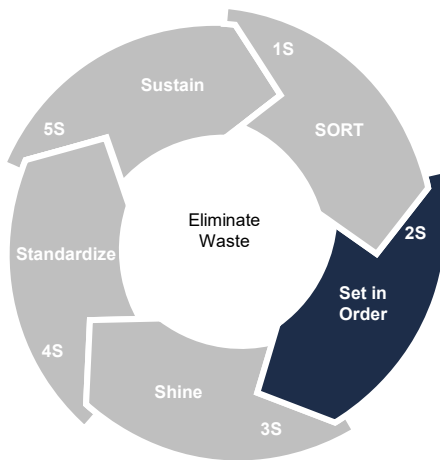


Just-in-time (JIT) Deliveries

Is it being delivered so that we have a full truck?
Or so we can bill for it?
Or are we ready to use it?



Implementing Set in Order

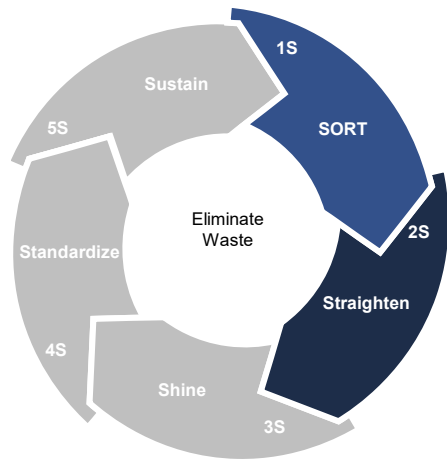


After sorting items, decide how to organize them.

Methodology:

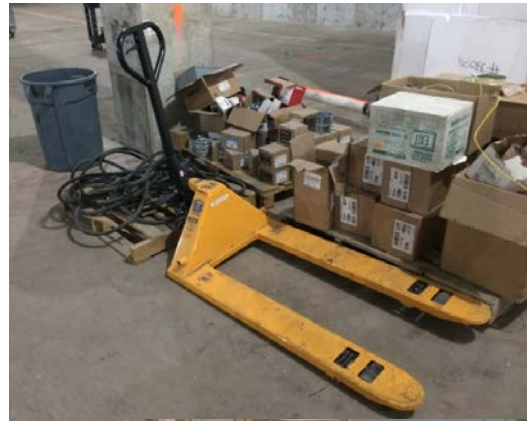
1. Provide easy access to frequently used items.
2. Group like items into logical categories.
3. Make item homes visual to make it clear when an item is missing or misplaced.
4. Use containers appropriate for housing the items.
5. Label containers or locations for items.
6. Be flexible, the initial pass will delivery significant improvement, more potential improvements may reveal after a period of time.

5S in the Field: Set in Order



Keep materials and tools
mobile and close to the work.

Everything on Wheels



5S in the Field: Set in Order



Keep materials and tools mobile and close to the work.

How does this prevent damage?
Increase productivity?
Improve safety?



Vs.



5S in the Field: Set in Order



Keep materials and tools mobile and close to the work.

Aim to keep tools and materials within 20 feet of the work.



← **Less than
20 feet** →



5S in the Field: Set in Order



Organize and label work areas.

Receiving Area



Material Storage Bin Labels



Receiving Bins For Site Distribution



5S in the Field: Set in Order



Keep materials and tools mobile and close to the work.



5S in the Field: Set in Order



What is good?
What can improve?



5S in the Field: Set in Order



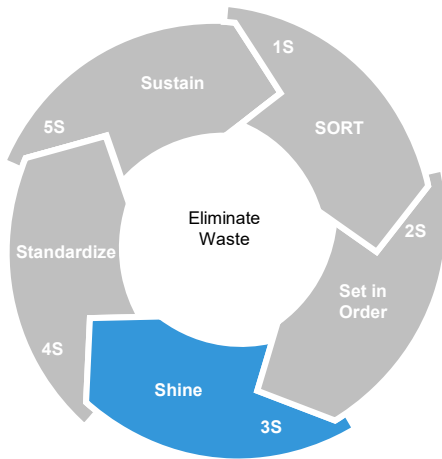
Keep electrical cords up and out of the way.



Vs.



Implementing Shine

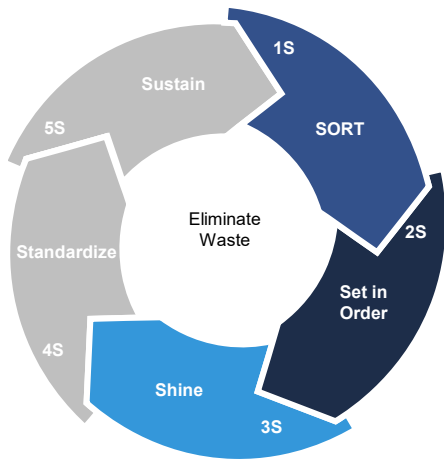


After Straightening items, elevate the work area by cleaning.

Methodology:

1. Using appropriate cleaners and tools make the work area sparkle.
1. Clean to understand. Use cleaning to uncover early warning signs of problems yet to come.
2. After cleaning, inspect the items and are to examine the condition.

5S in the Field: Shine



Keep the workplace neat and clean.

Always clean! Not just on Friday afternoon.

- Address dirt/waste at the source
- Clean as you go

*Continuous makes clean and organized the norm.
Once a week makes dirty and disorganized the norm.*



Courtesy PCL Construction

5S in the Field: Shine



What do you see?
What does this say about respect?

Respect for people.

- Enough toilets
- Clean
- Close to the work



5S in the Field: Shine



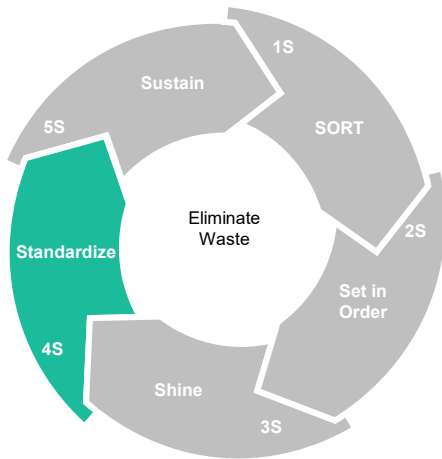
Which one “shines”?

How does this relate to safety?

Zero Tolerance:
To Tolerate is to Validate



Implementing Standardize



Standardize transforms 5S to a reproducible set of activities.

Methodology:

1. Document the tasks.
2. Capture the important essence of each task.
3. Create checklists with a name for each task.
4. Determine a way to organize the checklist (role, frequency of implementing, relationship).

5S in the Field: Standardize



Set the expectation.

This picture is posted in the work area.

How does this simple visual tool help keep the work area clean?



Courtesy Turner Construction

5S in the Field: Standardize



Hold to the expectation.

“When it comes to standards, as a leader, it’s not what you preach, *it’s what you tolerate*. When setting expectations, no matter what has been said or written, if substandard performance is accepted and no one is held accountable – if there are no consequences – *that poor performance becomes the new standard.*”

- from *Extreme Ownership: How U.S. Navy SEALs Lead and Win* by Jocko Willink & Leif Babin



Implementing Sustain



Sustain assures that 5S is applied on an ongoing basis.

Methodology:

1. Create a schedule embedding 5S practices as scheduled tasks.
2. Teach the 5S tasks through demonstration.
3. Supervise others until the 5S tasks become habits.
4. PDCA and adapt as necessary.

5S in the Field: Sustain



Keep it going.

What can happen if we don't have enough trash cans, brooms or empty the dumpsters?

Which is better... remove trash or don't bring it on site in the first place?

*Good start. But, why wasn't it dumped?
Is there enough dumpster capacity to support a clean jobsite?*



5S in the Field: Sustain



Keep it going.

Stay Disciplined!

- Trades clean as they go.
- Work area is clean at end of shift or completion of task (whichever comes first).
- Don't start working in a dirty area.
- Superintendent and team members should walk site every day.
- Show pictures, request corrective action, verify.



5S in the Field: Sustain



Keep it going.

- Make 5S a brief agenda item on daily meeting.
- Deliveries are a regular part of work planning meeting (In quantities that support 5S).

Courtesy of Turner Construction



5S in the Field: Sustain

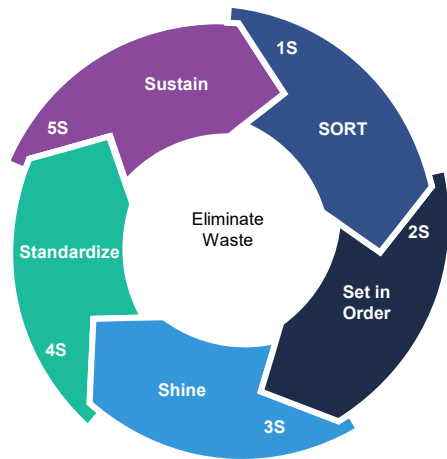


Keep it going.

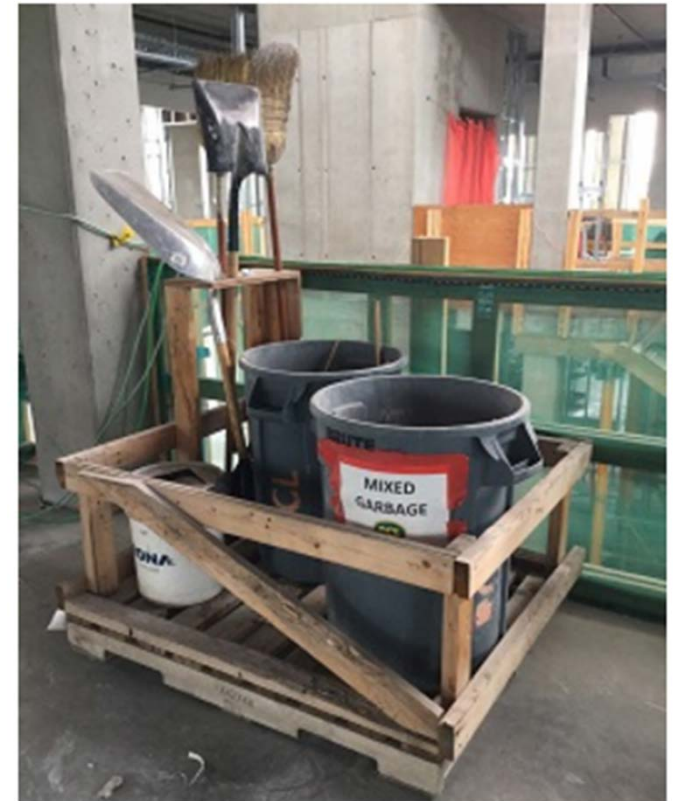
Involve trades in ongoing planning of laydown.
Keep materials and tools close to the work.



5S in the Field: Sustain



Make it easy to stay organized.



5S in the Subcontract

Possibility for how to word a subcontract:

5S IN THE SUBCONTRACT

On this project, we will use 5S thinking and practice to positively influence safety, quality, productivity and to make work flow efficiently. All project participants will apply 5S methods in all their work including on site, in the supply chain and in documentation.

Under the direction of Contractor, the entire construction team will collaborate to take a whole job approach to the organization, flow, delivery and removal of tools, equipment and materials.

Subcontractor tools, equipment and materials are to be kept organized. Laydown areas shall be assigned to each subcontractor and may change frequently throughout the course of the project. In some cases, due to jobsite constraints, assigned laydown may be limited or offsite. The team will work together to keep needed materials and tools as close to the work as possible. We will work to an **“everything on wheels”** policy. Subcontractors shall ensure that all materials are stored in a mobile fashion by using, without limitation, rolling cabinets, pipe racks with casters, or wheeled containers as much as reasonably possible such that laydown areas can be quickly repositioned. Subcontractors are to ensure that worker pathways and primary access to and from work areas are maintained.

Tools, equipment and materials shall only be brought on site **“just-in-time”** when they are needed and ready for use. Accordingly, subcontractor shall ensure that materials are ready for delivery to support the current project schedule to maintain workflow on site. Early delivery, such as to maintain a buffer of material, shall only be with the approval of Contractor. Once work is complete, tools, equipment and any remaining materials are to be promptly removed.

Excess or disorganized tools, equipment and materials will not be tolerated should it be deemed by Contractor that their presence or current condition has the potential to negatively impact safety,

5S in the Subcontract

Set the expectation

Collaboration

Make work flow efficiently

On this project, we will use 5S thinking and practice to positively influence safety, quality, productivity and to make work flow efficiently. All project participants will apply 5S methods in all their work including on site, in the supply chain and in documentation... the entire construction team will collaborate to take a whole job approach to the organization, flow, delivery and removal of tools, equipment and materials.

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5S in the Subcontract

Everything on Wheels

Keeps work areas clear and makes it simple to have materials and tools close to the work.

Subcontractor tools, equipment and materials are to be kept organized. ...The team will work together to keep needed materials and tools as close to the work as possible. We will work to an **“everything on wheels”** policy. ...all materials are stored in a mobile fashion ...as much as reasonably possible such that laydown areas can be quickly repositioned. ...ensure that worker pathways and primary access to and from work areas are maintained.

5S IN THE SUBCONTRACT

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5S in the Subcontract

Just-in-time

Deliver materials or equipment when it is needed and not before.

If needed, set buffers to insure the consistent flow of material.

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Excess or disorganized tools, equipment and materials will not be tolerated should it be deemed by Contractor that their presence or current condition has the potential to negatively impact safety, efficiency, the flow of work or the general morale or cooperation of

5S in the Subcontract

Nothing hits the ground

Continuous cleanup

No more Friday composite cleaning crew

Trades clean as they go

The site shall remain clean at all times following a **“nothing hits the ground”** policy. All areas of the project... must remain clean and free of debris... While excess material may naturally touch the ground during installation, to the extent practical, the subcontractor will “clean as you go” (and) shall not leave the work area without entirely cleaning the area, either per shift or upon completion of the task, whichever occurs first.

5S IN THE SUBCONTRACT

Excess or disorganized tools, equipment and materials will not be tolerated should it be deemed by Contractor that their presence or current condition has the potential to negatively impact safety, efficiency, the flow of work or the general morale or cooperation of other subcontractors. Subcontractor shall oblige any request by Contractor, acting reasonably, to organize or remove the tools, equipment or materials from the site. Correction shall be within 24 hours of notice or immediate if an unsafe condition exists.

The entire site shall remain clean at all times following a **“nothing hits the ground”** policy. All areas of the project, including work, laydown, lunch and parking areas must remain clean and free of debris in a manner acceptable to Contractor. While excess material may naturally touch the ground during installation, to the extent practical, the subcontractor will “clean as you go”. The subcontractor shall not leave the work area without sweeping and removing all debris, either per shift or upon completion of the task, whichever occurs first. Subcontractor shall oblige any request by Contractor, acting reasonably, to remove any subcontractor generated debris. Correction shall be within 24 hours of notice or immediate if an unsafe or unhealthy condition exists. Failure to do so may result in the work performed in your behalf at subcontractor's expense.

5S in the Field: Sustain

Simple 5S Assessment

- This is not an audit. No points. No check boxes.
- This is a tool to help teams.
- You should always be able to find something to improve.
- Go where the work is and observe.
- What is the problem? Root cause? Countermeasure?



5S TEAM ASSESSMENT A tool for teams to self-assess their work area	Area	
	Date	
	Assessed by	

You should always be able to find something to improve. Go to where the work is. Observe. What can improve? Is there a problem? What is the root cause? Areas to assess can include outside the fence or building, site, roadways, parking, laydown, entrances/exits, exteriors, corridors, holts, kitchen, eating area, toilets and restroom, meeting areas, work areas, desks, gang boxes, storage areas.

5S Questions	Observation Notes
SORT <ul style="list-style-type: none"> Is there anything that doesn't need to be here? Was it delivered too soon? Is there too much? Are we finished with it and should remove, dispose, archive or send it back? Postings/directions current? Remove anything out of date. Are we using "just-in-time" delivery? 	
STRAIGHTEN <ul style="list-style-type: none"> Is anything out of place? Why? Is there a place for it? Simple visuals to show where belongs? Tools and materials are close to the work? Safety equipment clearly labelled and easily accessible? Is there clear directional and location signage? Is "everything on wheels" or pallets with pallet jack? Power cords off the ground, sufficient lighting? 	
SHINE <ul style="list-style-type: none"> Is the team using "nothing hits the ground"? Is trash debris going straight in to rolling containers? What can be done to reduce trash generation? Is there anything that is not clean or well maintained? Sufficient cleaning supplies, including trash cans, brooms, dumpsters? Are they properly marked? Close by? Trash containers regularly emptied. Nothing overflowing. Are floors dry/well-drained? Site ready for rain/mud/snow? Good neighbors: Site fencing and signage clean and maintained, no trash outside fence, light or noise pollution. Roadways and parking well marked, clean and clear? Meeting Areas: Clean and things put away after meetings. 	
STANDARDIZE <ul style="list-style-type: none"> Can we improve a standard process? Make it simpler? Is there anything that can be standardized? Instructions clear how the process works, how to clean and straighten, where things belong, how and when to reorder? 	
SUSTAIN <ul style="list-style-type: none"> Is someone responsible? Is there a process in place to sustain? Are standards enforced? Regular assessments and follow-up? Is it visual? Instructions clearly displayed and easy to follow? Is 5S the way things are done, people are proud of their jobsite and work areas? 	

Updated August 14, 2019. Ideas for improvement are encouraged.
Courtesy Milestone Lean Consulting LLC

Discussion Question

Where can you use
5S Thinking?



Case Study: Implementation



Okanagan College Trades Renewal and Expansion Project (2016 Kelowna, BC)

PCL Constructors Westcoast Inc.
By David Crowe, Superintendent

- Cleaning and safety stations in the building
- Designated laydown areas outside
- Designated tool/material laydown in building
- Just-in-time material delivery
- Mobile material racking/storage systems
- Commitment to daily clean-up by trades
- Top-down commitment and buy-in at Job Start

Case Study: Lessons



Okanagan College Trades
Renewal and Expansion Project
(2016 Kelowna, BC)

PCL Constructors Westcoast Inc.
By David Crowe, Superintendent

- Required effort to “sell” to trades & planning time.
- Implement early: Get management buy-in & participation.
- Reward success: Do not accept non-conformance.
- Self-regulating: Trades saw increased productivity and became ‘self-regulating’. New trades followed suit. Trades held each other accountable.
- Workers appreciate a clean and organized environment that is easier, more efficient, safer.
- Costs were less than 4 hours/day for one GC worker to maintain stations and assist in JIT delivery.

5S is Simplicity

Visual – Easy to see and understand

Short – To the point, uncluttered

Easy – Standard formats. Same every time

Obvious – Make it hard to put things in the wrong place



VS.



5S and Prefabrication

Prefabrication, modularization and kitting reduces waste on site.



5S in the Shop

Construction is not just the field.
It includes the entire supply chain.

5S is well suited to the shop floor
since this is where it was first
conceived.



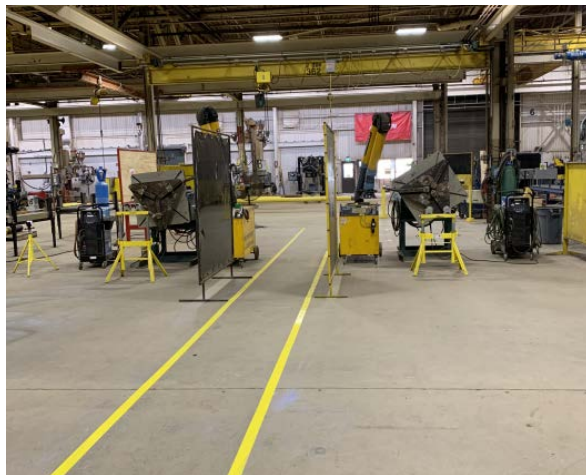
5S in the Shop



As prefabrication and modular construction become more common, Lean practices in the shop become more important.

5S in the Shop

Small Bore Bay
Typical Workstation
Configuration



In-Process
Kan Ban Area in use



Large Bore Bay
Typical WorkStation
Configuration



Courtesy of Aecon

5S in the Shop

Pilot Fabrication Cell 2C in use



Elbow Jigs and Line up clamps organized



Courtesy of Aecon

5S in the Shop



Designated area for both incoming and outgoing shipments



Set locations for crates and carts used for material movement in the shops

Courtesy of Aecon

5S in the Shop or the Field

Organization of equipment and material will result in more efficient and high value use of indoor areas

Nuclear Outdoor Covered Storage



Yard Equipment Storage Location



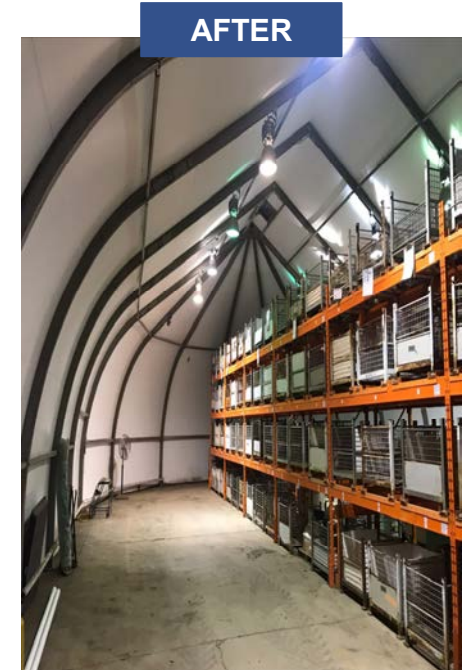
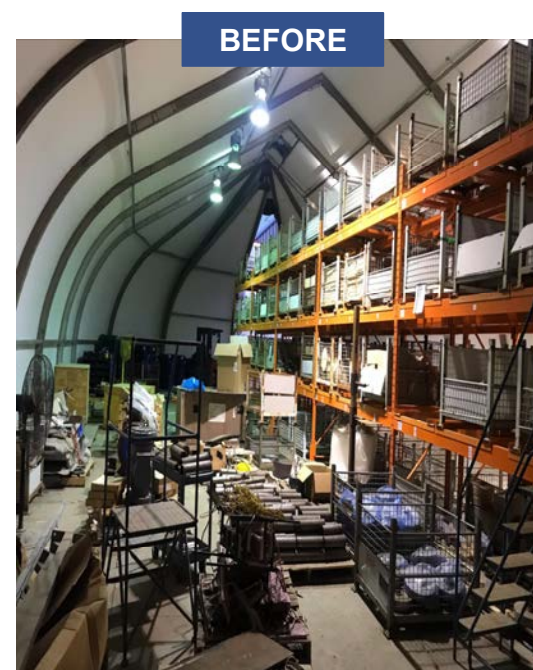
Courtesy of Aecon

5S in the Shop or the Field

Tools Storage



Material Tent Storage Area



Courtesy of Aecon

5S in the Office/Workspace



5S in the Office/Workspace



Where should we start?

PCL ThinkLean 5S ASSESSMENT

LOCATION: _____ DATE: _____
ASSESSED BY: _____

SAMPLE 5S ASSESSMENT WALK
You should always be able to find something to improve. Go to where the work is. Observe.
What can improve? Is there a problem? What is the root cause?
Check outside the fence or building, into restrooms, parking, hallways, entrances/exits, exterior, corridors, lobbies, kitchens, waiting areas, lobbies/restrooms, meeting areas, work areas/lands, gang boxes, storage areas.

5S Questions	Observations
Sort 1. Is there anything that doesn't need to be here? 2. Was it delivered too soon? Is there too much? Are we finished with it and should remove, dispose, archive or send it back? 3. Posting/deliveries cannot? Remove anything out of date. 4. Are we using "last in date" delivery?	
Set in Order 1. Is anything out of place? Why? 2. Is there a place for it? Simple visual to show where belongs? 3. Tools and materials are close to the work? 4. Safety equipment clearly labeled and easily accessible? 5. Is there clear directional and location signage? 6. Is "exception as usual" or pulled with pulled just? 7. Power cords off the ground, sufficient lighting?	
Shine 1. Is the team using "outthink the space"? 2. Is trash being going straight to recycling containers? 3. What can be done to reduce trash generation? 4. Is there anything that is not clean or well maintained? 5. Sufficient cleaning supplies, including trash cans, brooms, dusters? Are they properly marked? Clean off? 6. Trash containers regularly emptied, nothing overflowing? 7. Are floors dry/swab-dusted? Size ready for rain/snow? 8. Good ergonomics like flooring and storage (desk and maintained, no trash outside fence, light or noise pollution, hazardous and parking well marked, clean and clear?) 9. Meeting Areas: Clean and things put away after meetings.	
Standardize 1. Can we improve a standard process? Make it simpler? 2. Is there anything that can be standardized? 3. Instructions clear how the process works, how to clean and straighten, where things belong, how and when to record?	
Sustain 1. Is someone responsible? Is there a process in place to sustain? 2. Are standards enforced? Regular assessments and follow-up? 3. Is it clear? Instructions clearly displayed and easy to follow? 4. Is the way things are done, people are proud of their jobs and work areas?	

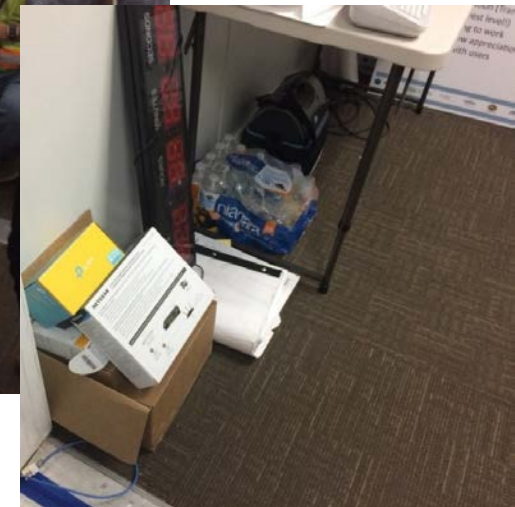
Copyright October 25, 2019. Help for improvement are encouraged.



5S in the Office/Workspace



The meeting room is a great place to start...



5S in the Office/Workspace



Visual Management Demands Good 5S

A meeting room is like a command center. To make good decisions we need to be able to see flow.



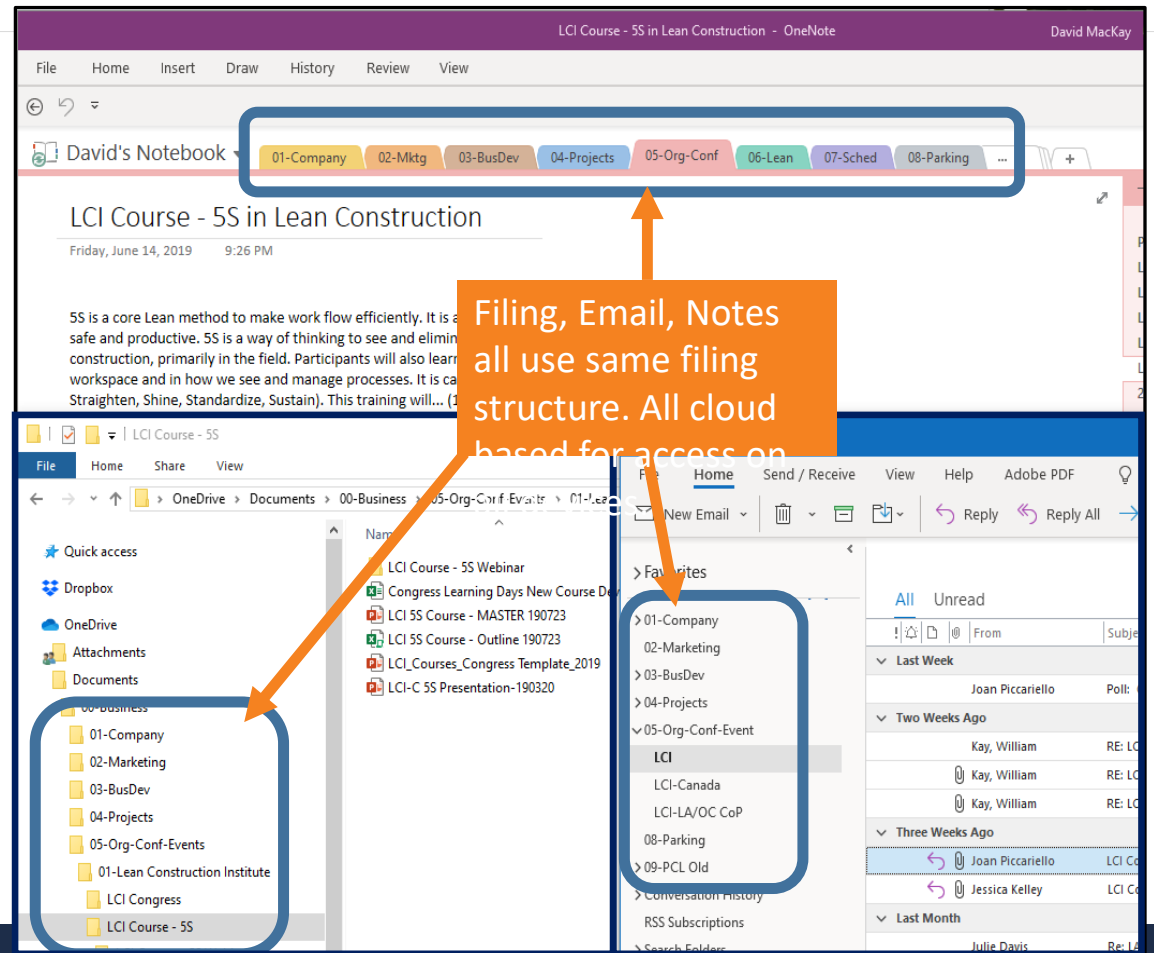
5S in the Office/Workspace



Electronic Files

30 Second Test – Can you find in a gang box, computer filing structure or supply cabinet what you are looking for in 30 seconds or less and move on?

If not, more 5S work is needed.



LCI Course - 5S in Lean Construction - OneNote

David MacKay

File Home Insert Draw History Review View

David's Notebook

01-Company 02-Mktg 03-BusDev 04-Projects 05-Org-Conf 06-Lean 07-Sched 08-Parking ...

LCI Course - 5S in Lean Construction

Friday, June 14, 2019 9:26 PM

5S is a core Lean method to make work flow efficiently. It is a safe and productive. 5S is a way of thinking to see and eliminating waste in construction, primarily in the field. Participants will also learn how to organize their workspace and in how we see and manage processes. It is called Straighten, Shine, Standardize, Sustain). This training will...

Filing, Email, Notes all use same filing structure. All cloud based for access on

File Home Share View

OneDrive > Documents > 00-Business > 05-Org-Conf-Event > 01-Lean Construction Institute

Quick access

Dropbox

OneDrive

Attachments

Documents

00-Business

01-Company

02-Marketing

03-BusDev

04-Projects

05-Org-Conf-Event

01-Lean Construction Institute

LCI Congress

LCI Course - 5S

LCI Course - 5S Webinar

Congress Learning Days New Course Day

LCI 5S Course - MASTER 190723

LCI 5S Course - Outline 190723

LCI_Courses_Congress Template_2019

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LCI-Canada

LCI-LA/OC CoP

08-Parking

> 09-PCL Old

> Conversation History

RSS Subscriptions

> Search Folders

All Unread

Last Week

Joan Piccariello

Two Weeks Ago

Kay, William

Three Weeks Ago

Joan Piccariello

Last Month

Julie Davis

5S Email

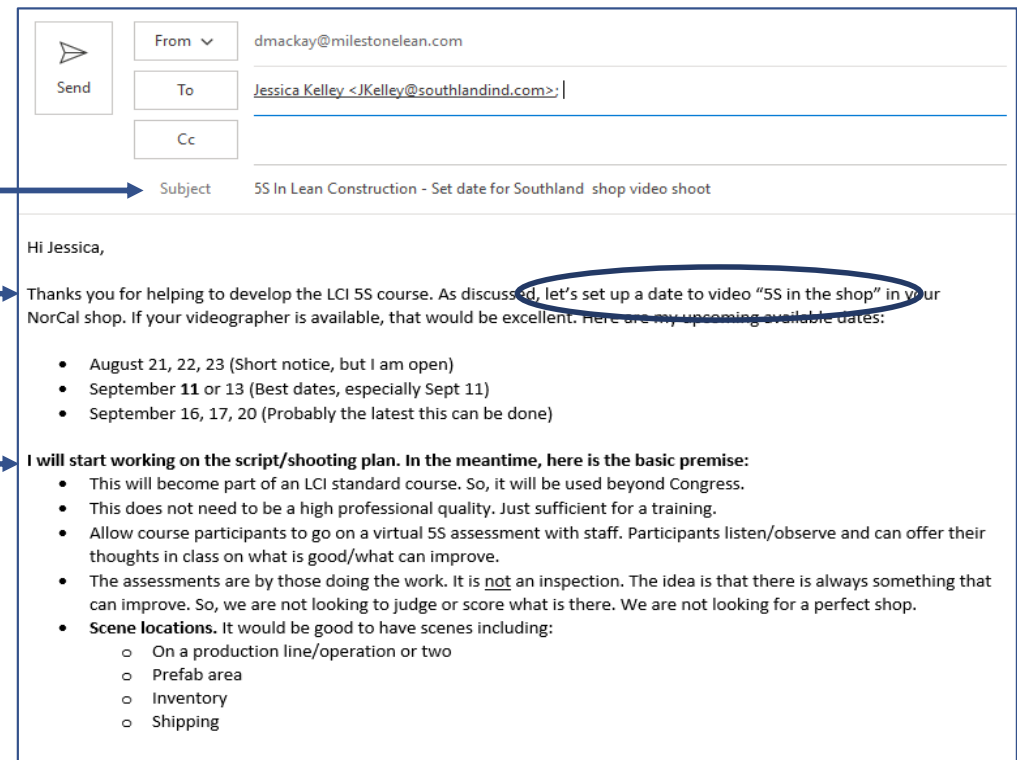
Most emails are too long, don't get to the point... and don't get read.

Subject line specific and easily searchable.
Reader knows what you want.

Put your action request in the first line.

Aim for three lines or less.
If longer, use bullets or headings.

Read it back to yourself before sending.



Send

From: dmackay@milestonelean.com

To: Jessica Kelley <JKelley@southlandind.com>

Cc:

Subject: 5S In Lean Construction - Set date for Southland shop video shoot

Hi Jessica,

Thanks you for helping to develop the LCI 5S course. As discussed, let's set up a date to video "5S in the shop" in your NorCal shop. If your videographer is available, that would be excellent. Here are my upcoming available dates:

- August 21, 22, 23 (Short notice, but I am open)
- September 11 or 13 (Best dates, especially Sept 11)
- September 16, 17, 20 (Probably the latest this can be done)

I will start working on the script/shooting plan. In the meantime, here is the basic premise:

- This will become part of an LCI standard course. So, it will be used beyond Congress.
- This does not need to be a high professional quality. Just sufficient for a training.
- Allow course participants to go on a virtual 5S assessment with staff. Participants listen/observe and can offer their thoughts in class on what is good/what can improve.
- The assessments are by those doing the work. It is not an inspection. The idea is that there is always something that can improve. So, we are not looking to judge or score what is there. We are not looking for a perfect shop.
- **Scene locations.** It would be good to have scenes including:
 - On a production line/operation or two
 - Prefab area
 - Inventory
 - Shipping

Build a Truck

Let's explore the impact of 5S!



Build a Truck

These parts represent pieces to assemble into a roadwork truck.

Our job during a 40 second shift is to build the entire truck.

When I say “Go”, start assembling.



Play – Round 1

40 **STOP!**

30 This was designed for kids four
and up...

20

10



5S Numbers Game – Round 2

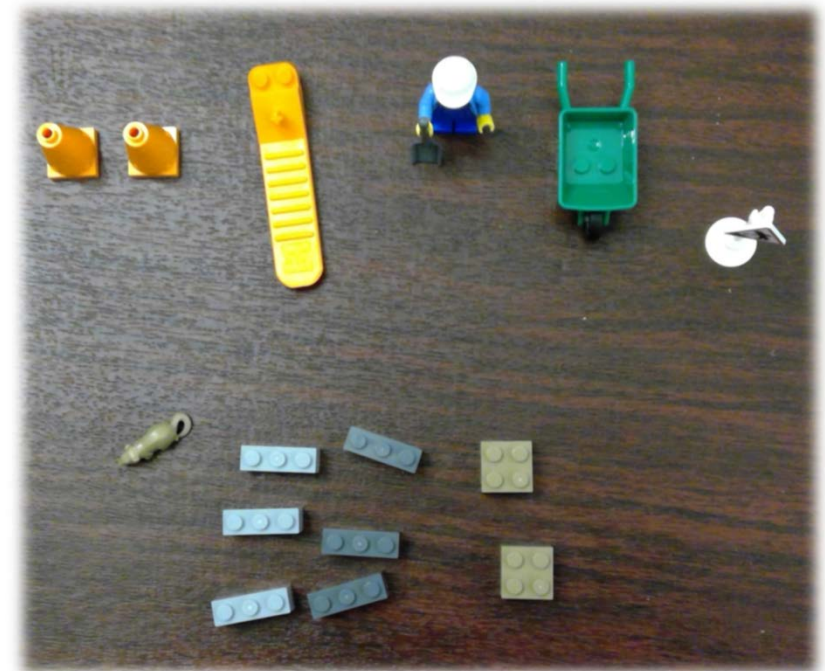
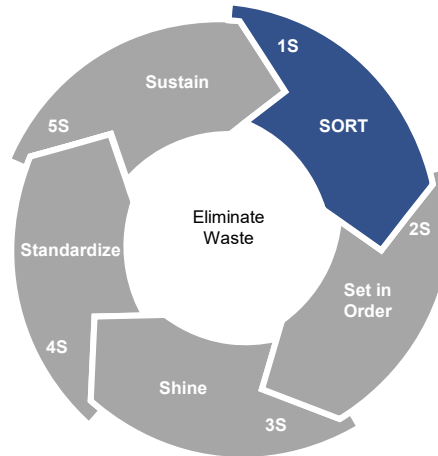
Who finished the worker?

Who started the truck?

Let's *implement Sort* for this next exercise!

Remove the waste pieces; use the picture for reference.

40 seconds on the clock... When I say “**Go**”, start assembling.



Play – Round 2

40 **STOP!**

30

20

10



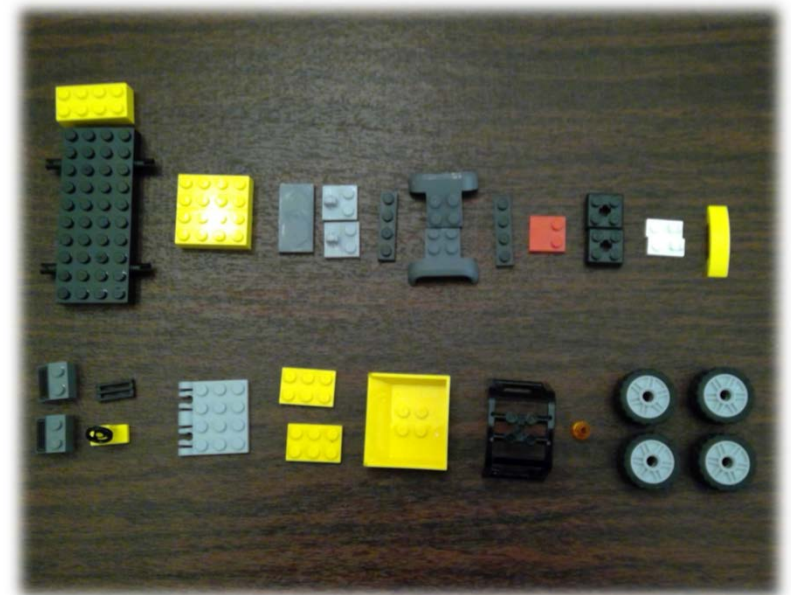
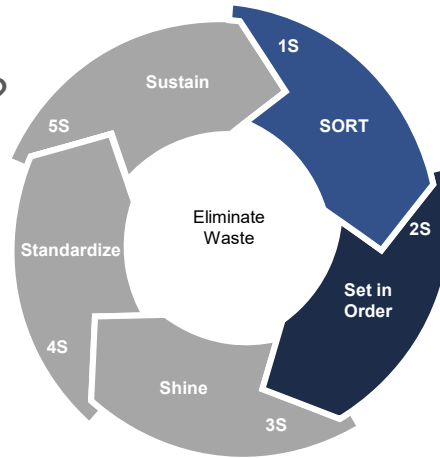
5S Numbers Game – Round 3

Hold up your truck. How did we do?

Use the orange separator tool to disassemble the pieces. Let's *implement Set in Order* and try again!

Look at the picture and instructions and set the pieces in order.

40 seconds on the clock... When I say “Go”, start assembling.



Play – Round 3

40 **STOP!**

30

20

10



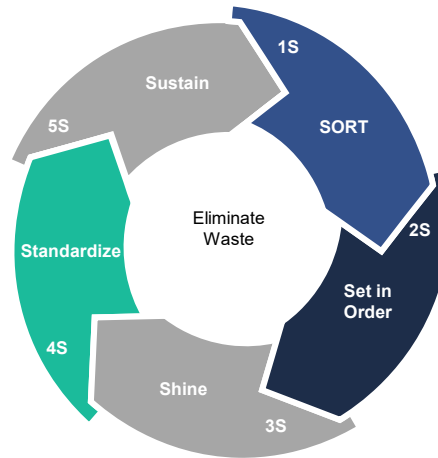
5S Numbers Game – Round 4

How far did we get this time?

Use the orange separator tool to disassemble the pieces. Let's *implement Standardize*.

What can we do to *Standardize*?

Any ideas?

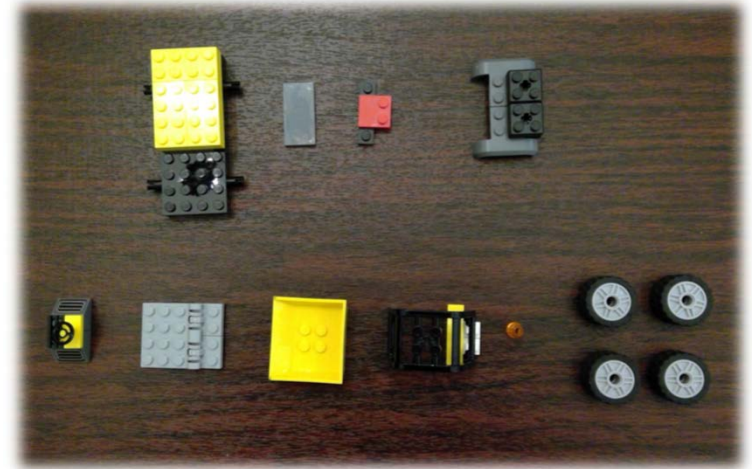
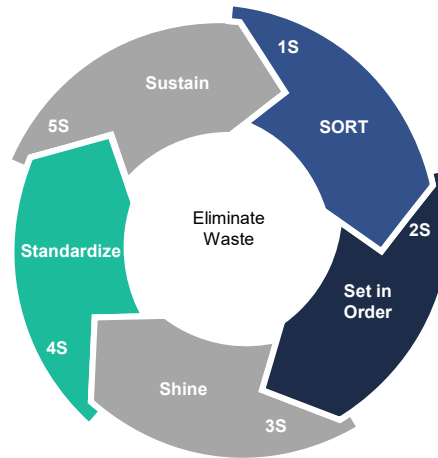


5S Numbers Game – Round 4

Modularization?

Take a few minutes, modularize up to 4 pieces, and any other standardize idea you had.

Let's try again, ready...



Play – Round 4

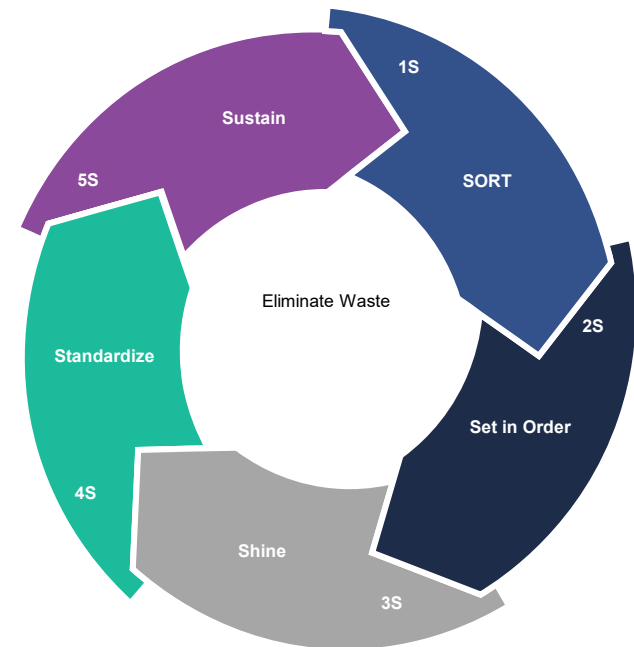


STOP!

How did everyone do?

How does this simple exercise apply to the field?

How do we apply sustain to this model? Can offsite fabrication be sustained?

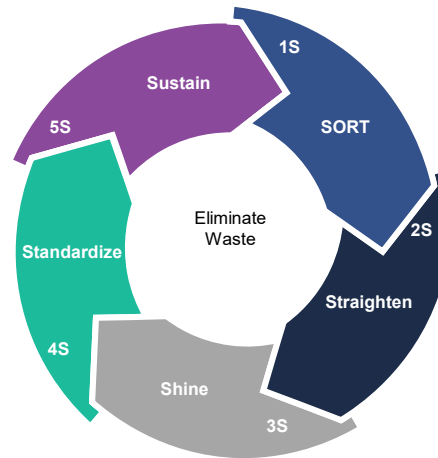


5S Numbers Game – Round 5

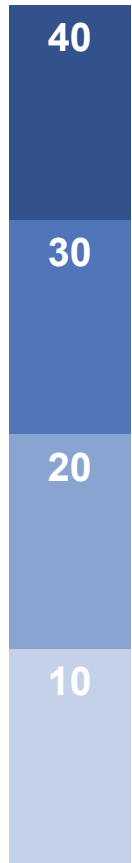
How far did we get this time?

Use the orange separator tool to disassemble the pieces. Let's *implement Sustain*.

Modularize your pieces and pass them to another team.



Play – Round 5

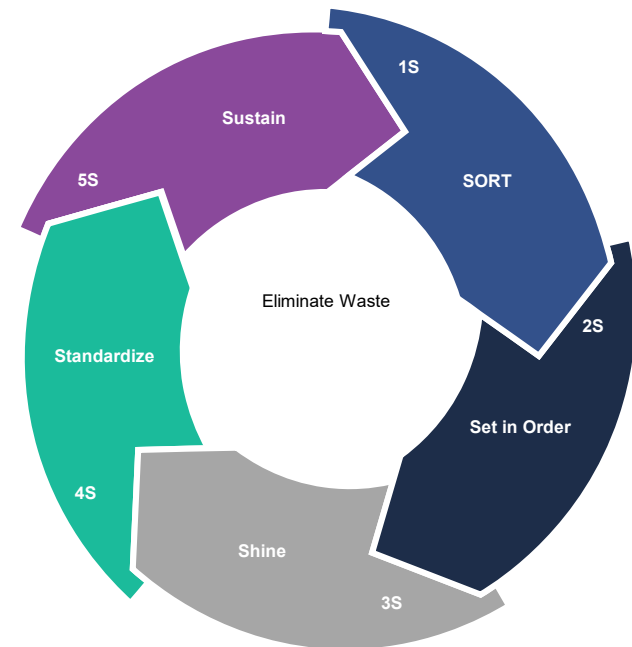


STOP!

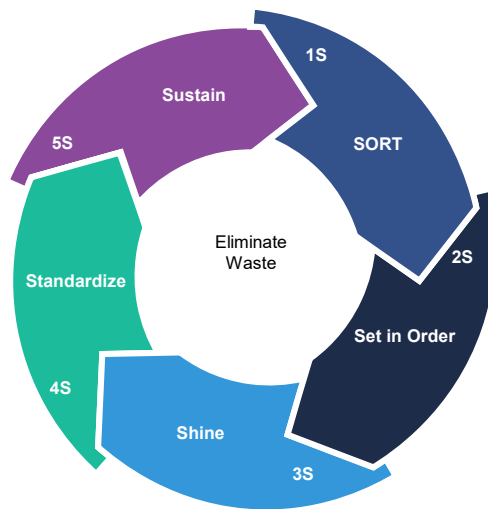
How did everyone do?

How does this simple exercise apply to the field?

How do we apply sustain to this model? Can offsite fabrication be sustained?



5S and Continuous Improvement



What is continuous improvement?



A systematic ongoing effort to improve processes

Get better and better at moving the canoe down the river

Continuous

- Ongoing
- Never ending
- Always looking to improve and a process to do it

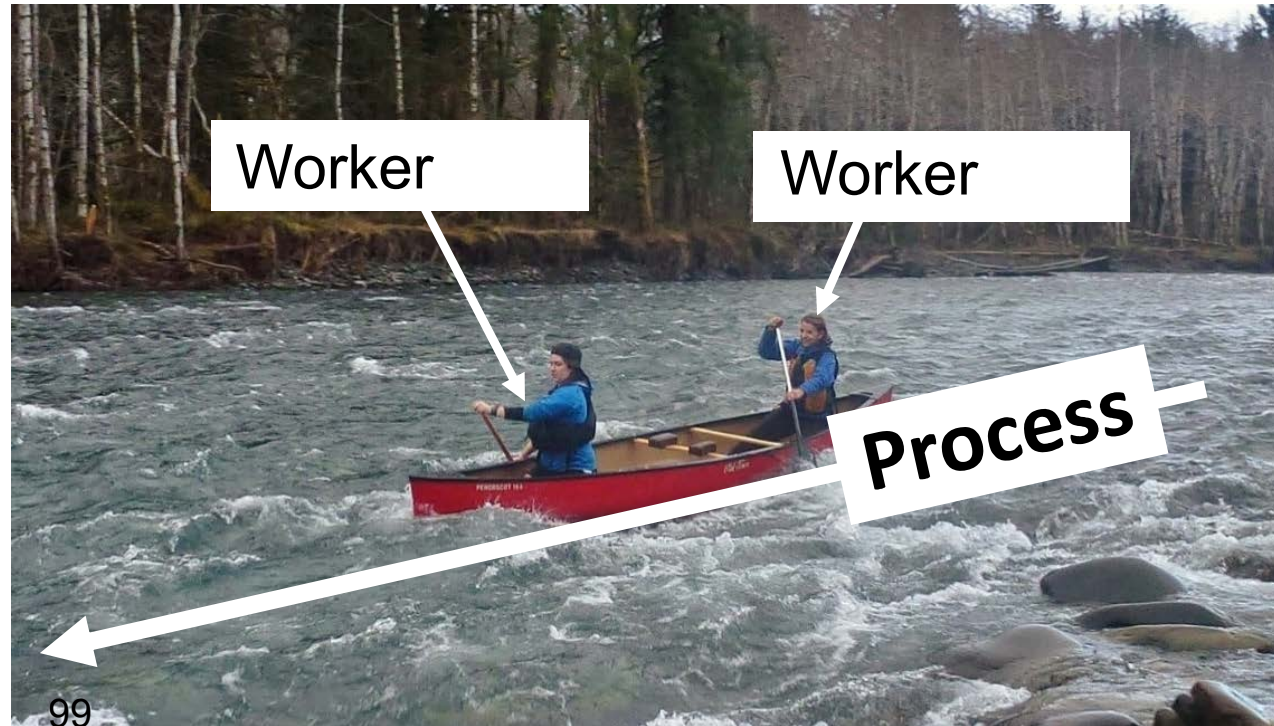
Improvement

- Improve what?
- Reduce waste
- Improve flow



Continuous Improvement Mindset

My Job = Doing the Work
+ Improving the Work



...Everyone, Every Day!

5S Assessment

Implementing Improvements

Template for conducting a 5S Assessment

Take out your 5S Assessment Form and get ready.

5S ASSESSMENT – Page 2

From what you observed on your assessment walk... What can be improved?

- (1) Understand what is the real problem or issue. Get to the root cause.
- (2) How do we avoid repeating it? What can we do differently to improve?
- (3) Implement the change. Check improvement and adjust as needed.
- (4) Share the improvement. Make it the standard.

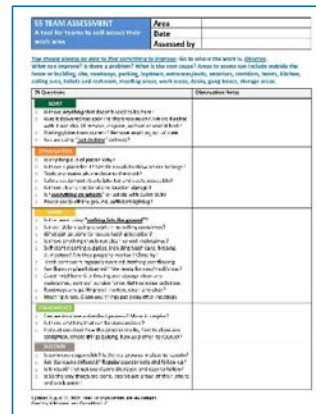


Areas for improvement (Key items from your observation notes)	What will we do about it? Who will follow-up?
<i>From your notes on the front, summarize the key points: What is the problem and root cause? What is the idea for improvement?</i>	<i>What steps will we follow to implement the improvement. Who will be responsible? How will be document and share it?</i>

Virtual 5S Assessment

Let's go on a virtual 5S assessment in **Southland Industries'** (MEP Building Systems Specialty Contractor) Northern California Shop via video.

- The videos are unscripted.
- These are real situations and issues brought up while filming.
- Some comments were re-shot for clarity.



5S TEAM ASSESSMENT	
Assessed by	Assessed by
1. Sort: What is the purpose of this item? Is it necessary? If not, remove it. If it is necessary, is it in the right place? Is it in the right container? Is it in the right quantity?	
2. Set in Order: Is the item in the right place? Is it in the right container? Is it in the right quantity? Is it in the right condition?	
3. Shine: Is the item clean? Is it in good condition? Is it in good repair? Is it in good working order?	
4. Standardize: Is the item in the right place? Is it in the right container? Is it in the right quantity? Is it in the right condition?	
5. Sustain: Is the item in the right place? Is it in the right container? Is it in the right quantity? Is it in the right condition?	

Listen to the observations of those who do the work.

What do you see that is good?

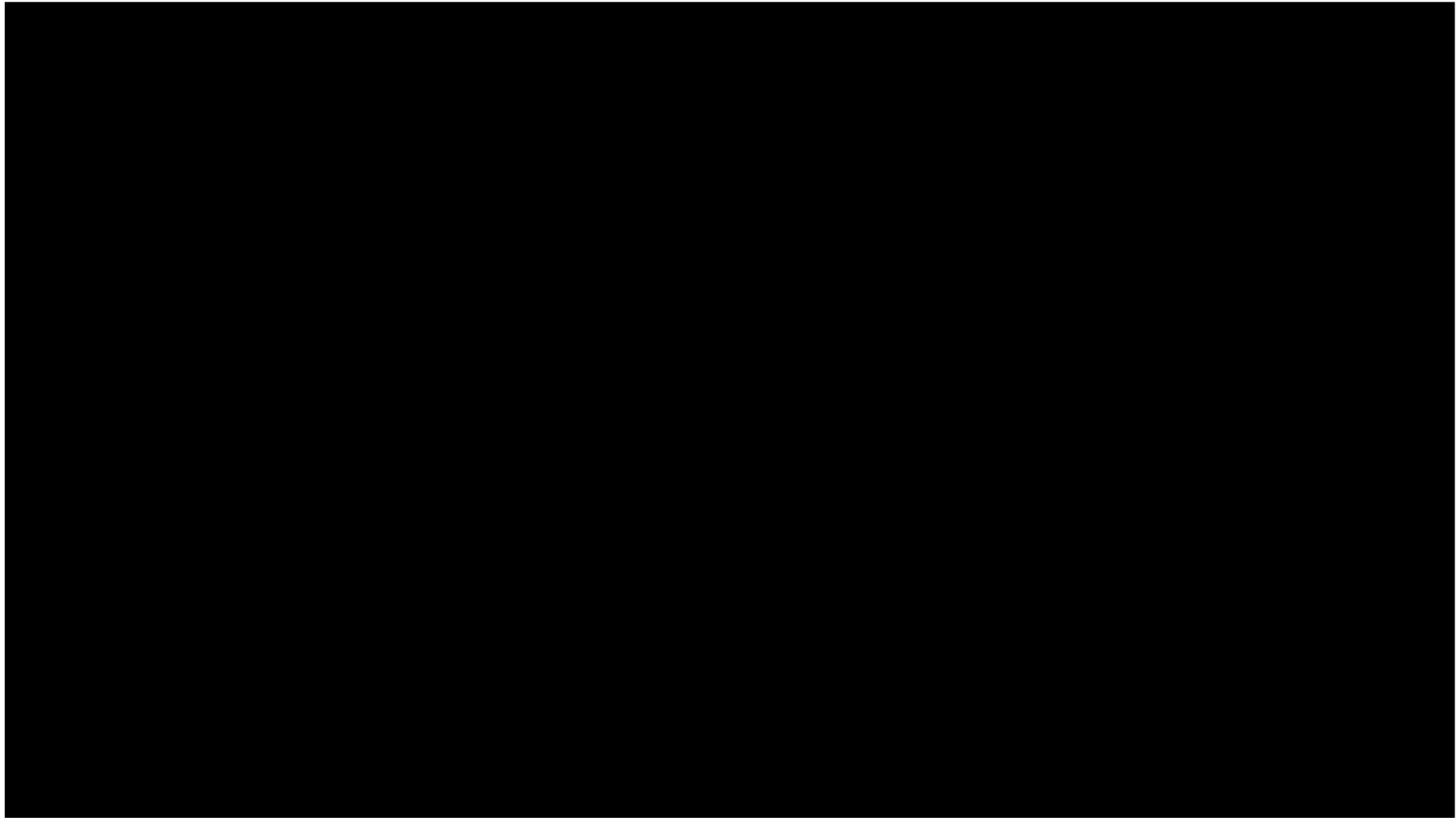
What can be improved?

Look for the root cause.

Use your 5S assessment form.

Ready? Let's Go

Virtual 5S Assessment



5S Virtual Assessment

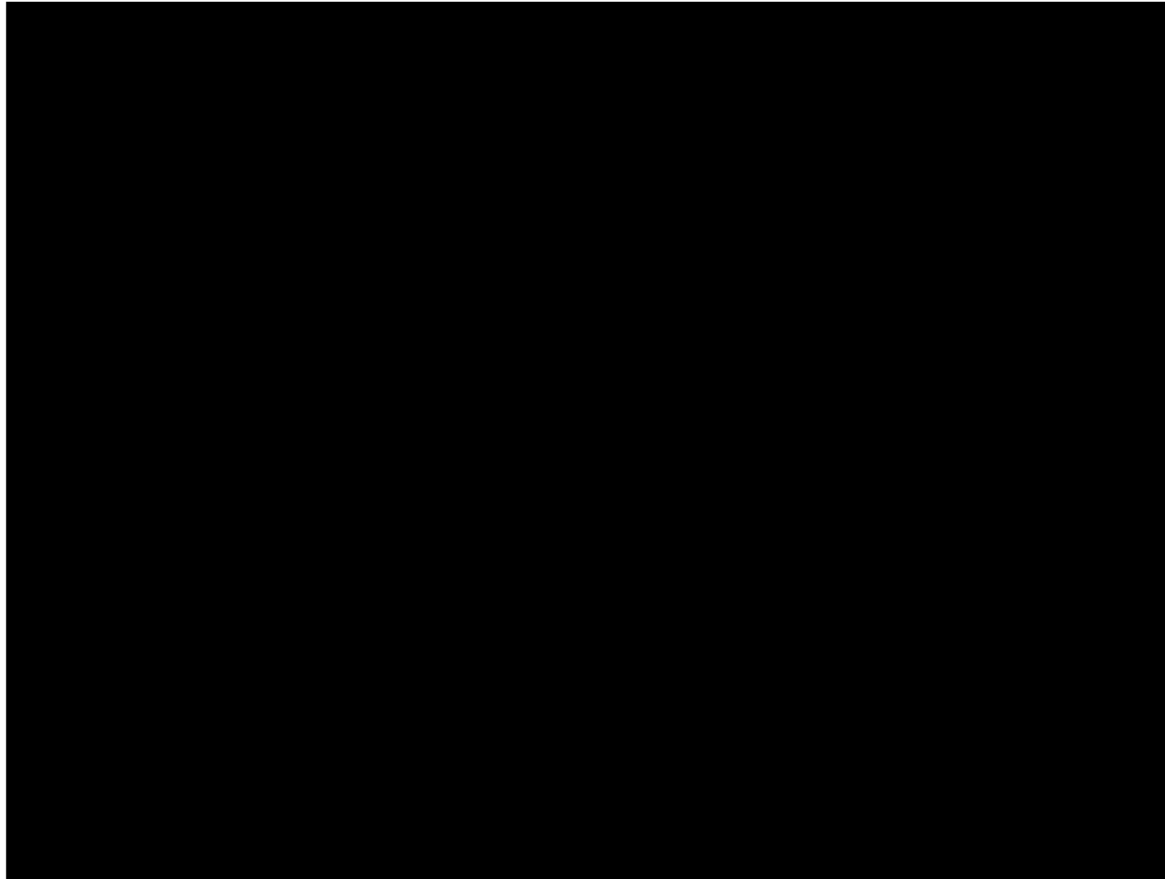


Sheet Metal & Shipping

Look for:

- Area was a dumping ground. What is the root cause?
- How could visual management help?
- Do you think others realize they are blocking the shipping area when they drop materials?
- Who did most of the talking?
- The problem involved other departments. What did they do?
- Did they come up with a plan to address the problem?

5S Virtual Assessment



5S Virtual Assessment



Sheet Metal & Shipping

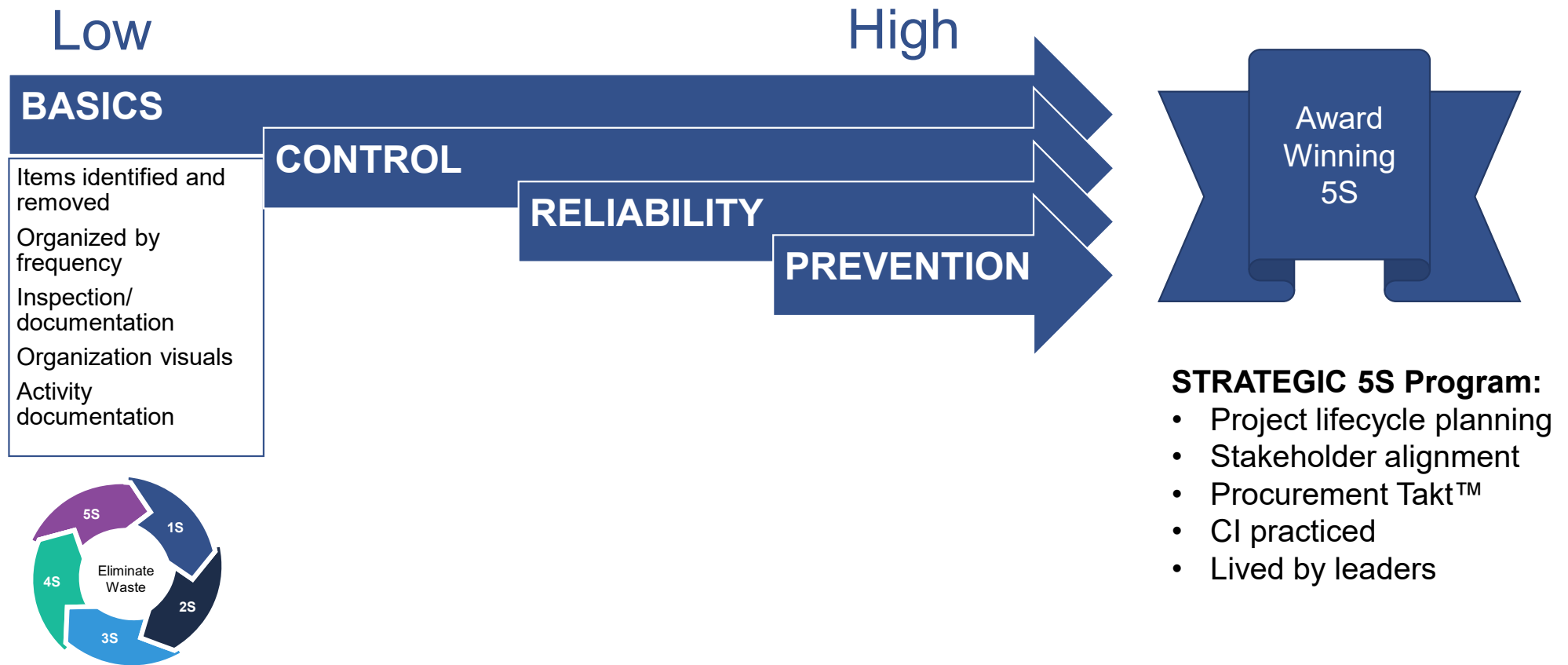
What did you see?

- Area was a dumping ground. What is the root cause?
- How could visual management help?
- Do you think others realize they are blocking the shipping area when they drop materials?
- Who did most of the talking?
- The problem involved other departments. What did they do?
- Did they come up with a plan to address the problem?

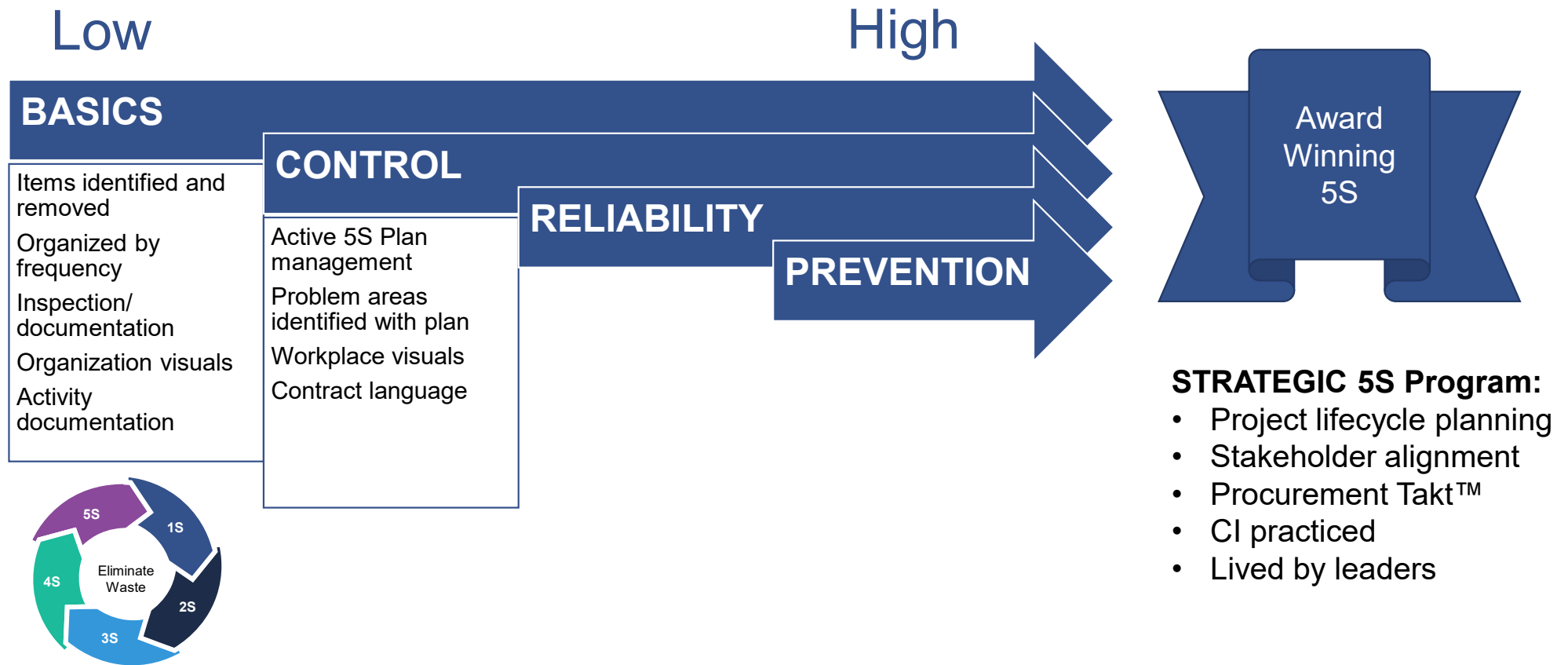
5S Levels of Achievement



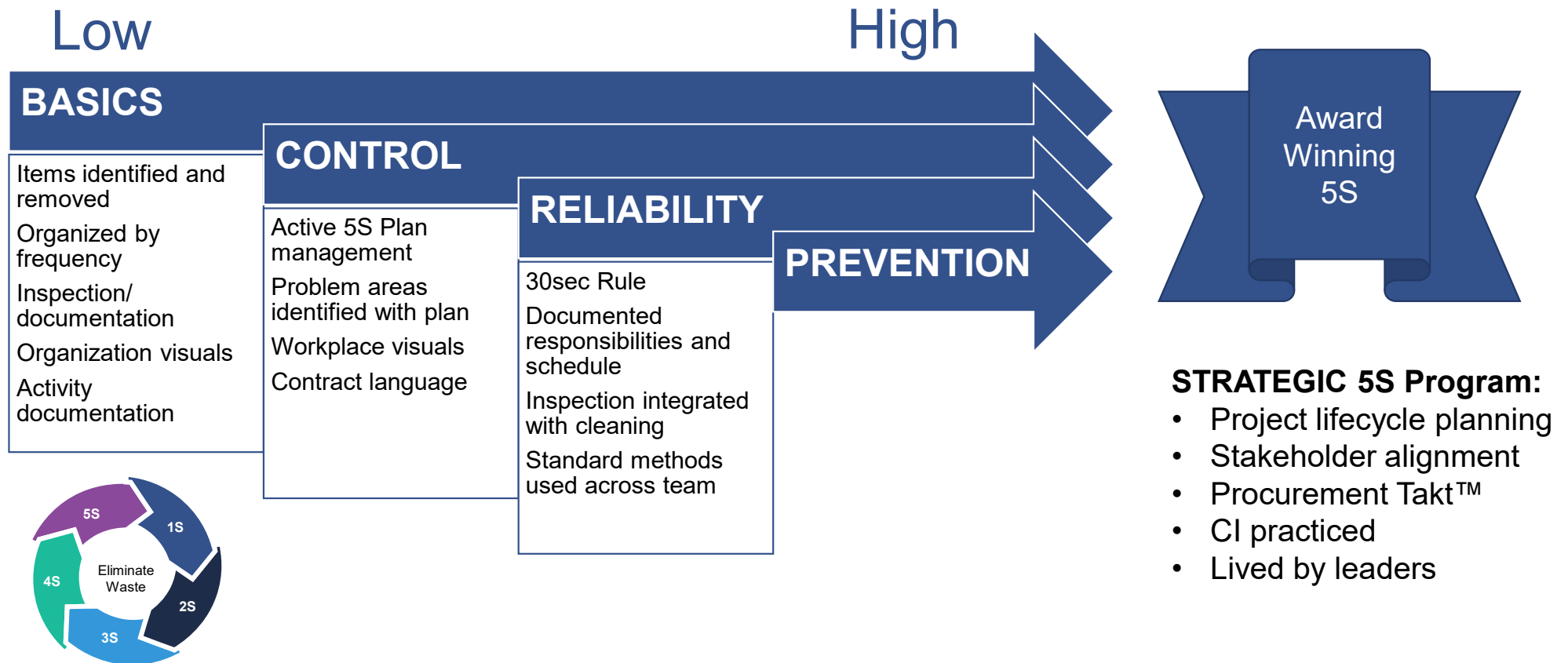
5S Levels of Achievement



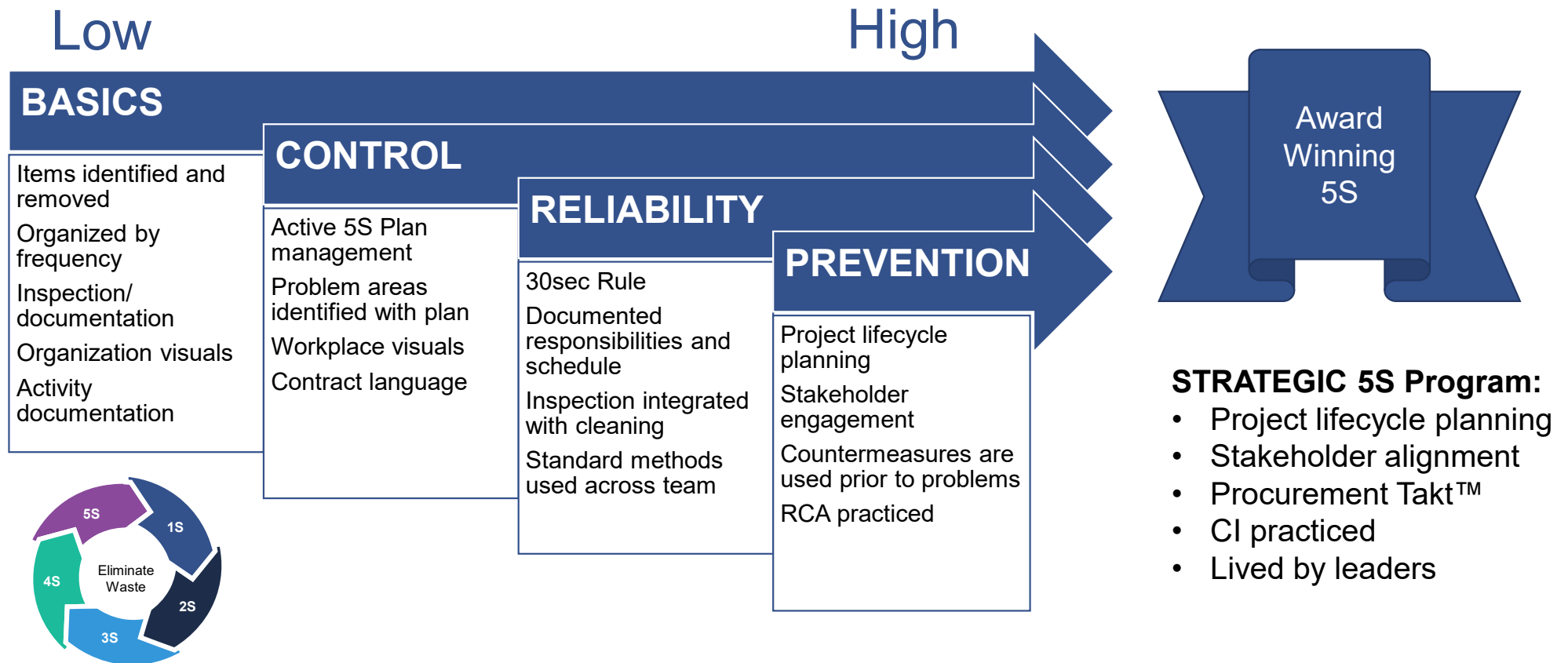
5S Levels of Achievement



5S Levels of Achievement



5S Levels of Achievement



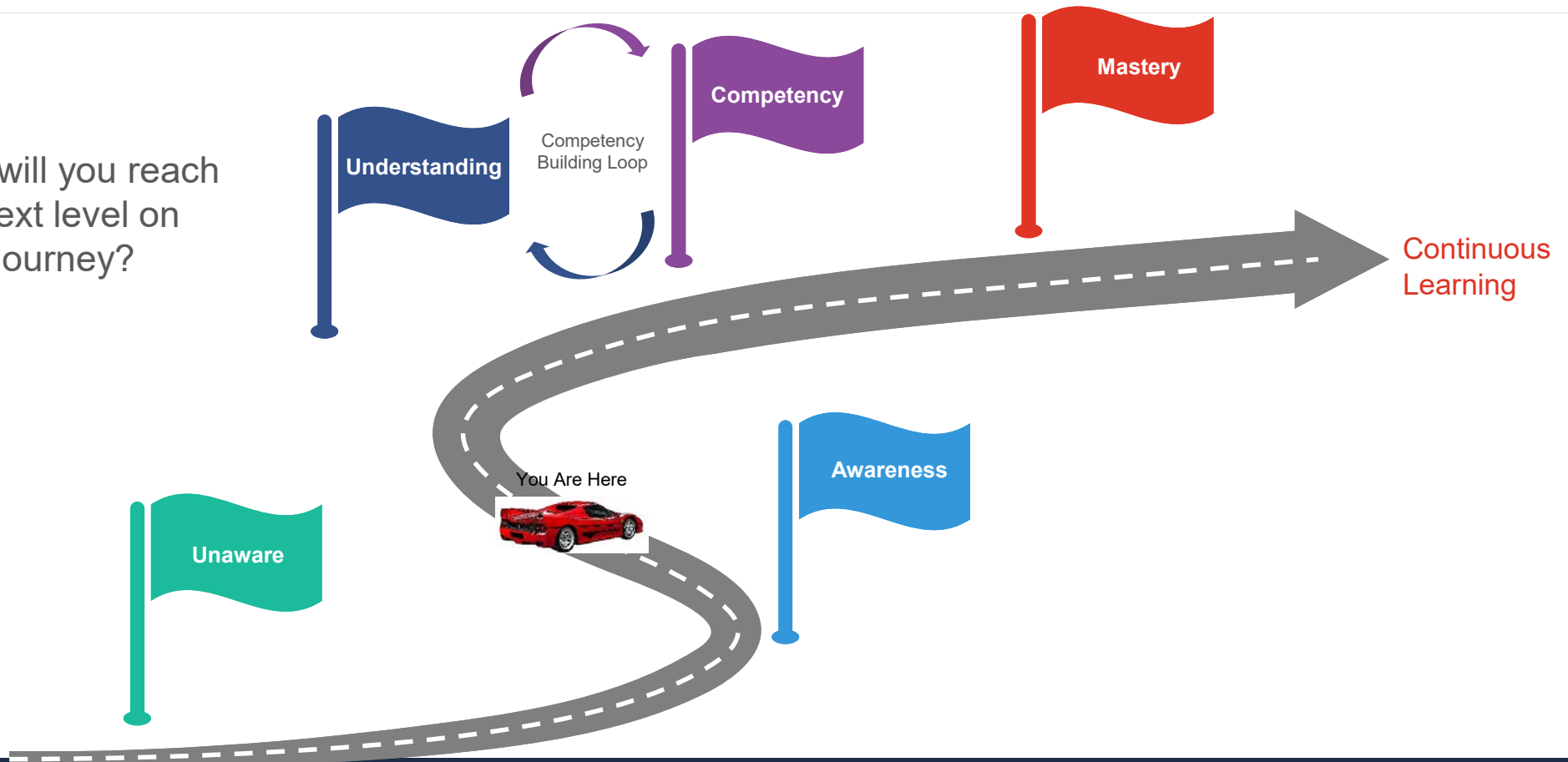
Discussion Question

What are your key take-aways from this session?



Lean Journey to Mastery

How will you reach the next level on your journey?



Ways to Continue

Books:



Events:

- Local Community of Practice
- Congress (October)
- Design Forum (May)

eLearning:

Learn on your own time without taking time off project work.

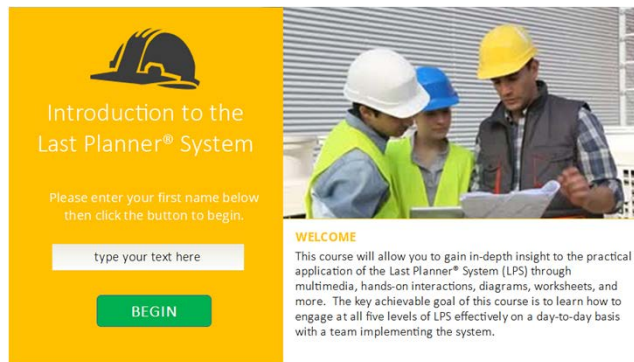
Start learning now:

www.LeanConstruction.org

eLearning Courses



- Introduction to the Last Planner System®
- Introduction to Lean Project Delivery
- Lean in the Design Phase
- Effective Big Room
- Target Value Delivery
- Introduction to Last Planner System® in Design



5S Wrap Up

What will I do tomorrow?

What new actions or ideas that you learned today can you take back with you?

Questions? Let's talk.



Michael Cloud

Jacobs

Michael.Cloud@jacobs.com



Plus: What produced value during the session?



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