Lean Construction Institute

Provider Number H561

The Lean Builder Workshop

LCIV.LBW

Joe Donarumo, Keyan Zandy

Monday, October 19, 2020

2 LU Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

This course is registered with AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

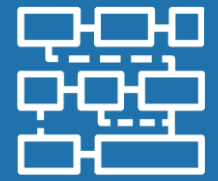
Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Course Description

The Lean Builder Workshop is specifically designed for the “boots on the ground,” – also known as the Last Planners(R). Starting with WHY and ending with HOW, we will provide a holistic understanding of Lean’s benefits. Then we’ll simplify and clearly articulate the benefits of four primary Lean concepts, and teach them to you in a highly-relatable immediately-applicable, and field-friendly manner. Participants will walk away with an easy-to-follow blueprint and implementation plan to lead their team and dramatically improve their project delivery process through the following principles: #1 – Daily Huddles #2 – Visual Communication $3 – The Eight Wastes (through the lens of a construction project) #4 – Constraint Management in the face of pressing project deadlines and heavily competing priorities, the addition of unfamiliar Lean Construction processes or tools can feel intimidating, overwhelming, and easy to ignore in favor of what’s already known and comfortable. Because we are builders as well as operations-based Lean practitioners, we understand what you’re up against. We have created The Lean Builder Workshops with you in mind – to fill in the blanks, provide relevancy, and offer the help you’ll need to make Lean implementation easier to understand and accomplish.

Learning Objectives



01.

Participants will understand the meaning of Lean project management and be able to identify its benefits.

02.

Participant will be prepared to implement Lean tools and practices with their project management teams.

03.

Participants will be able to define and discuss four principles of Lean management.

04.

Participants will recognize the correlation between the advantages of Lean for both builders and operations-based Lean practitioners.

This concludes The American Institute of Architects
Continuing Education Systems Course

Lean Construction Institute info@leanconstruction.org


THE
LEAN
BUILDER
WORKSHOP
Blueprint for Builder's Lean

Joe Donarumo

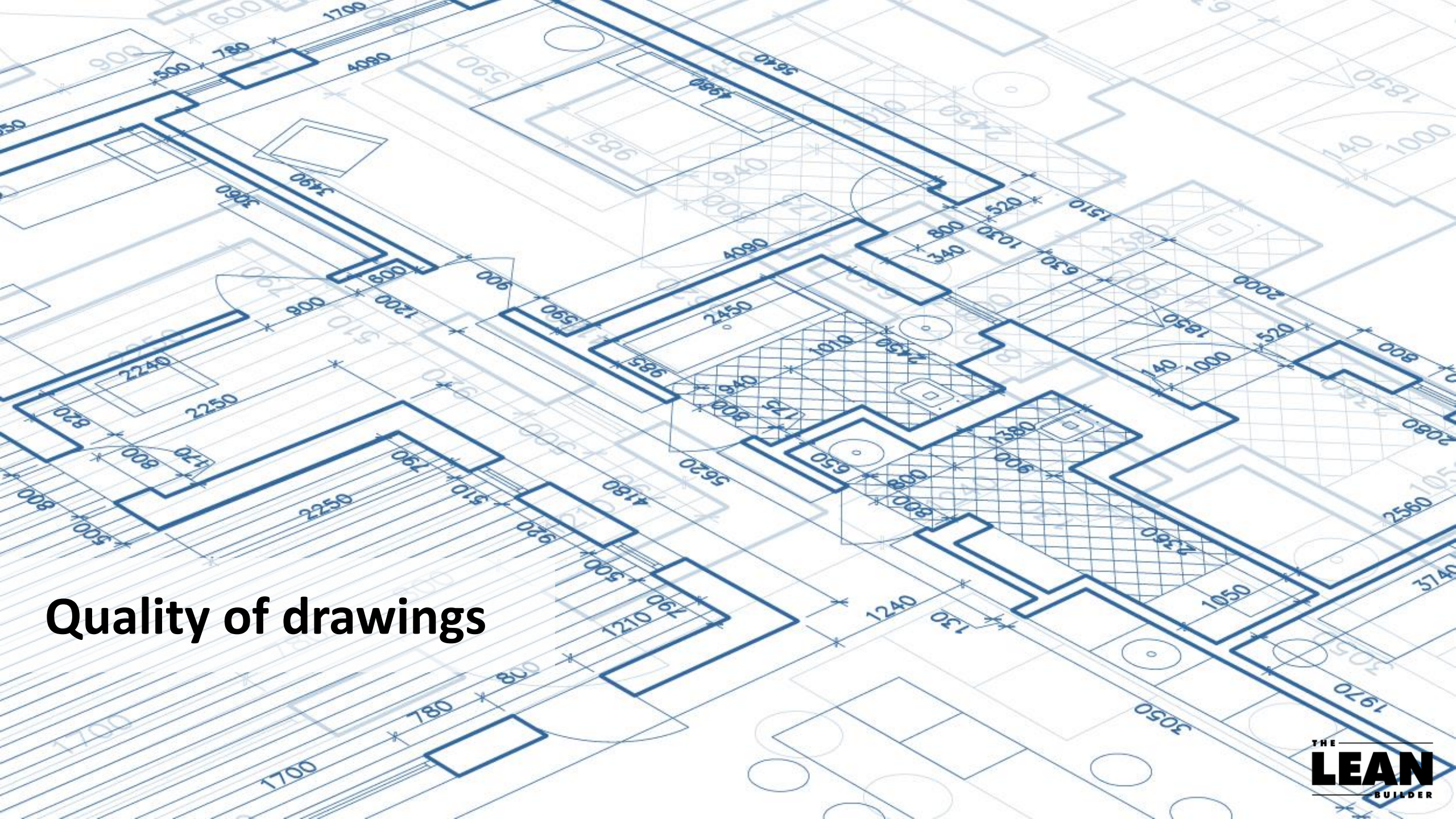
LINBECK

Keyan Zandy

SKILES GROUP

THE LEAN BUILDER

THE LEAN BUILDER



Quality of drawings

THE LEAN BUILDER

Fewer skilled tradespeople


Trades are less prepared

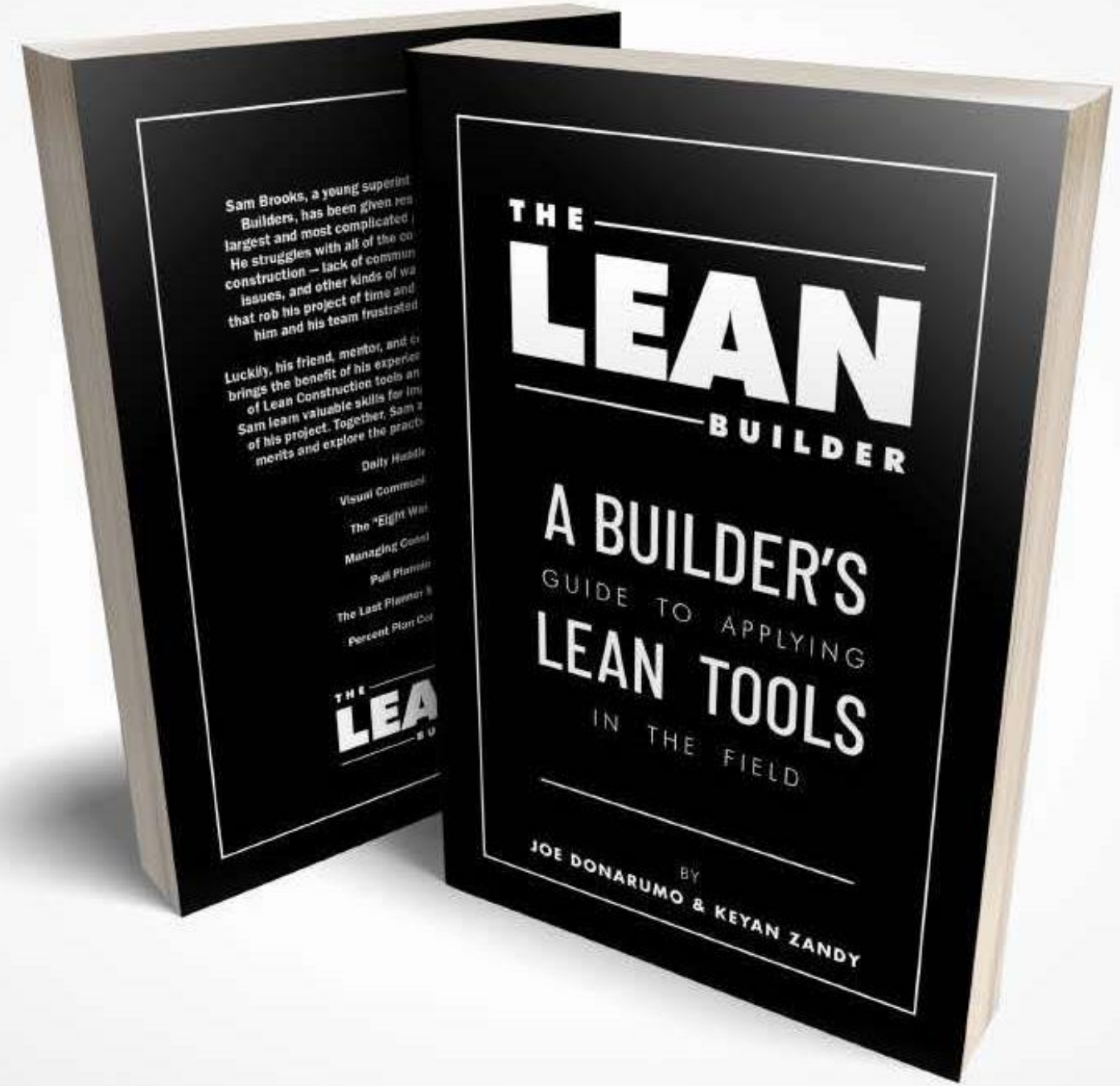
Workforce is aging

THE LEAN BUILDER

Lean

is the way forward

THE LEAN BUILDER



THE LEAN BUILDER


Daily
Huddles
THE
LEAN
BUILDER

7 Steps for Effective Huddles

THE LEAN BUILDER

#1

Keep it short.

THE LEAN BUILDER

#2

Start on time.

End on time.

THE LEAN BUILDER

#3

No phones or distractions.

THE LEAN BUILDER

#4

Stand up.

THE LEAN BUILDER

#5

Establish a routine.

Make it stick.

THE LEAN BUILDER

#6

Stay on track:

- E.L.M.O.
- Parking Lot

THE LEAN BUILDER

#7

Involve the entire team.

THE LEAN BUILDER


Anton
Cabinetry
EXL WAITING AREAS
THE
LEAN
BUILDER


JHA
DROP
BOX
MILESTONE
OVERALL
WEATHER
DEMO


CookChildren's
WALSH RANCH
OUTPATIENT FACILITY
A2.02T
100 Days
THE LEAN BUILDER

Daily Huddles

- Greater accountability amongst trade partners
- Beginning step in shifting/improving jobsite culture
- Reduced fire drills for field leaders

THE LEAN BUILDER


Visual
Communication
THE
LEAN
BUILDER

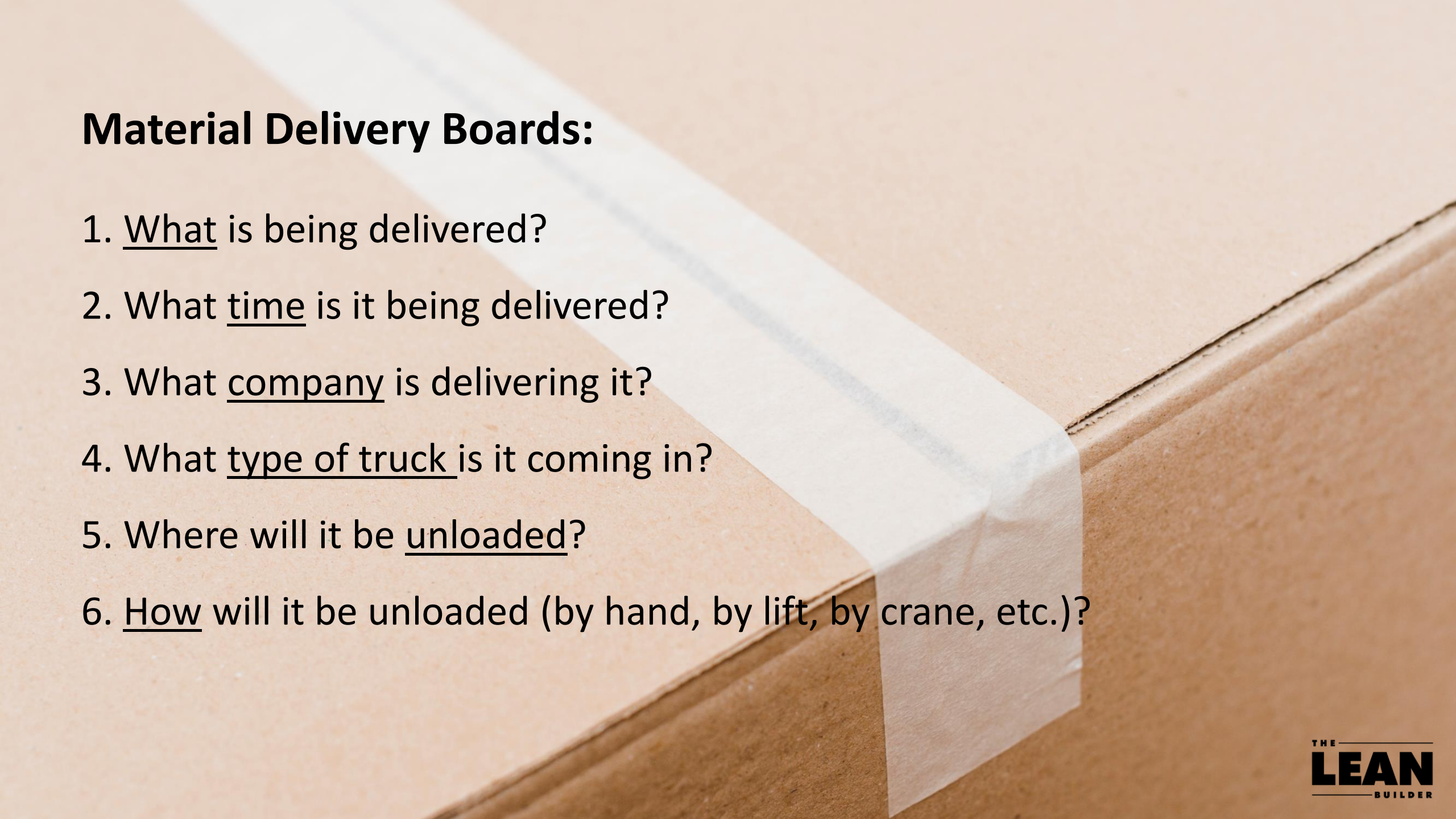
Floor Plans/Elevations Under Laminate + Dry Erase Markers:

1. What they are working on;
2. Where they are working;
3. How many crews/workers are on-site;
4. Where there are constraints;
5. What material deliveries are coming up.


24X16
THE
LEAN
BUILDER


1
2
3
4
EXISTING MEDICAL OFFICE BUILDING
VISITOR'S
SIGN-IN
HKS


LINBECK
Kelly Center
01 LEVEL 02 FLOOR PLAN
01 LEVEL 01 FLOOR PLAN
THE LEAN BUILDER



Material Delivery Boards:

1. What is being delivered?
2. What time is it being delivered?
3. What company is delivering it?
4. What type of truck is it coming in?
5. Where will it be unloaded?
6. How will it be unloaded (by hand, by lift, by crane, etc.)?

THE LEAN BUILDER

DELIVERY BOARD

		9 Monday	10 Tuesday	11 Wednesday	12 Thursday	
1	Company/Trade	FUJI FILM		RUNNING GEAR		
2	Foreman Name/Phone Number	DAVID - 817 213 7662		JOE 817 213 7662		PA
3	Materials Being Delivered	RAD ROOM EQUIP.		CONNEX DE-MOB		F
4	Delivery Time	8AM		9 AM		
5	Delivery Company Name	FUJI		RUNNING GEAR		C
6	Truck Type	SEMI		SEMI / HAUL		
7	Unload Area	WEST DOORS		NORTH SIDE		E
8	Unload Method	SKYTRACK		N/A		
1	Company/Trade	ARCH FAB				
2	Foreman Name/Phone Number	IAN 817 219 0808				
3	Materials Being Delivered	CANOPY				
4	Delivery Time	7 AM				
5	Delivery Company Name	ARCH FAB				
6	Truck Type	16' TRAILER				
7	Unload Area	EAST SIDE				
8	Unload Method	SKID STEER				
1	Company/Trade					
2	Foreman Name/Phone Number					
3	Materials Being Delivered					
4	Delivery Time					
5	Delivery Company Name					
6	Truck Type					
7	Unload Area					
8	Unload Method					

Inspection Boards:

1. What is being inspected?
2. Who requested the inspection?
3. What date/time was the inspection requested?
4. What date/time will the inspection occur?
5. What are the results of the inspection?

THE LEAN BUILDER

INSPECTIONS

SKILES GROUP

MONDAY	Company | Trade	Skiles Group						
	Foreman name | Telephone #	Seth						
	Inspection name	Rebar + MEP insp						
	Inspection type: ie., lab, 3rd party, City, QC	QC						
	Inspection time	All Day						
	Date inspection called In							
	Confirmation #							
	Results	Pass						
TUESDAY	Company | Trade	Earthworks	Concrete					
	Foreman name | Telephone #	Jeff	see ProCon					
	Inspection name	Area D	Rebar					
	Inspection type: ie., lab, 3rd party, City, QC	Rebar						
	Inspection time	10:00 AM						
	Date inspection called In	9/16						
	Confirmation #							
	Results	TBD						
WEDNESDAY	Company | Trade							
	Foreman name | Telephone #							
	Inspection name							
	Inspection type: ie., lab, 3rd party, City, QC							
	Inspection time							
	Date inspection called In							
	Confirmation #							
	Results							
THURSDAY	Company | Trade	Earthwork	Concrete	Earthwork	Concrete	Polk	Plumbing	
	Foreman name | Telephone #	Jeff		Terrance		Ed		
	Inspection name	Kitch Slab	Rebar	Paving (site)		Grease Interceptor		
	Inspection type: ie., lab, 3rd party, City, QC	City		City		City		
	Inspection time	UnKnown		UnKnown		1:00 PM		
	Date inspection called In	9/17		9/18		9/16		
	Confirmation #							
	Results	TBD		TBD		TBD		
FRIDAY	Company | Trade							
	Foreman name | Telephone #							
	Inspection name							
	Inspection type: ie., lab, 3rd party, City, QC							
	Inspection time							
	Date inspection called In							
	Confirmation #							
	Results							

Visual Communication

- Improved trade to trade communication
- Greater awareness on project direction
- Facilitates meaningful collaboration

THE LEAN BUILDER


Managing
Constraints
THE
LEAN
BUILDER

What is the constraint?

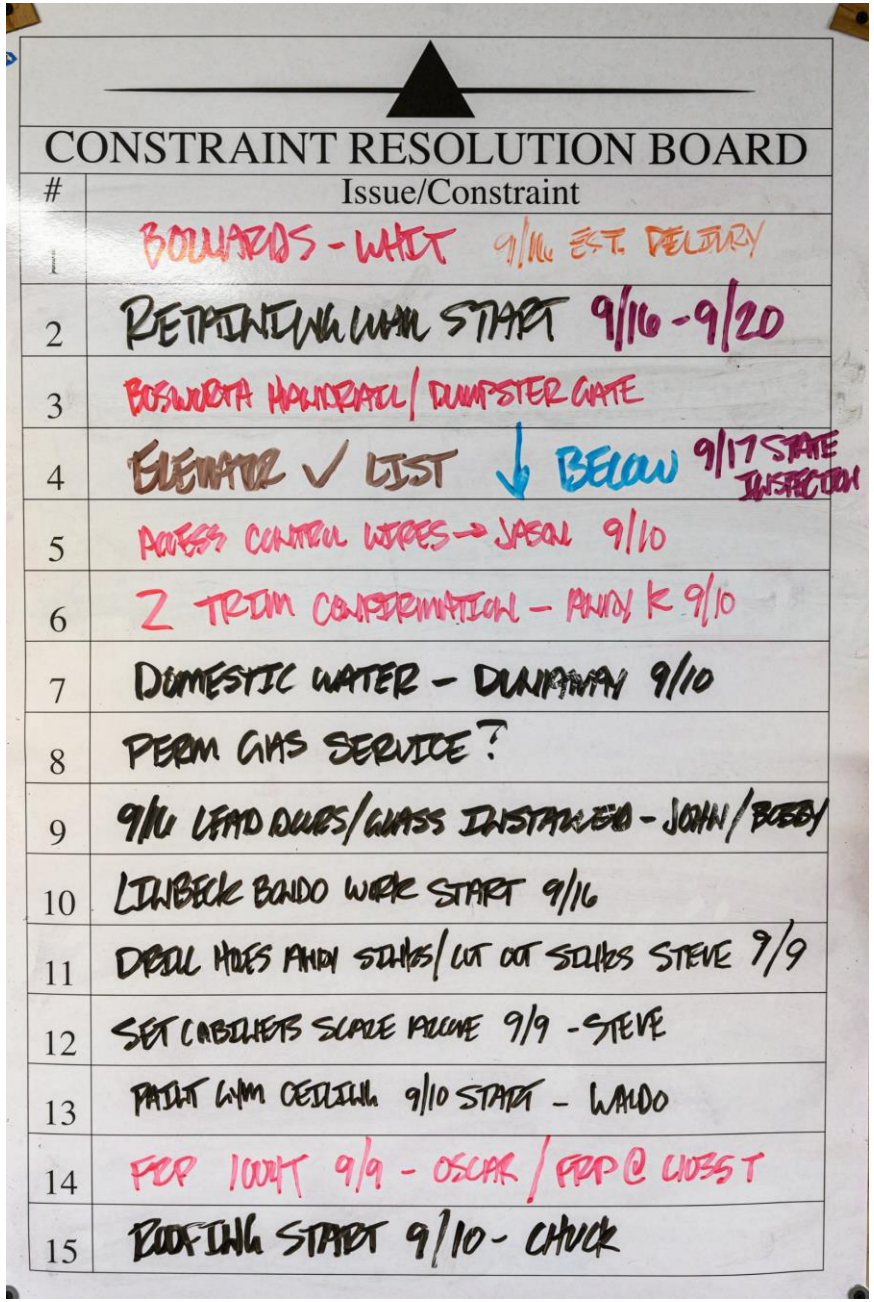
Where is it occurring?

Who is responsible for fixing it?

When will it be resolved?

- Share the responsibility
- Review daily
- Removing constraints
- Develop and leverage your soft skills
- Build the project culture

THE LEAN BUILDER

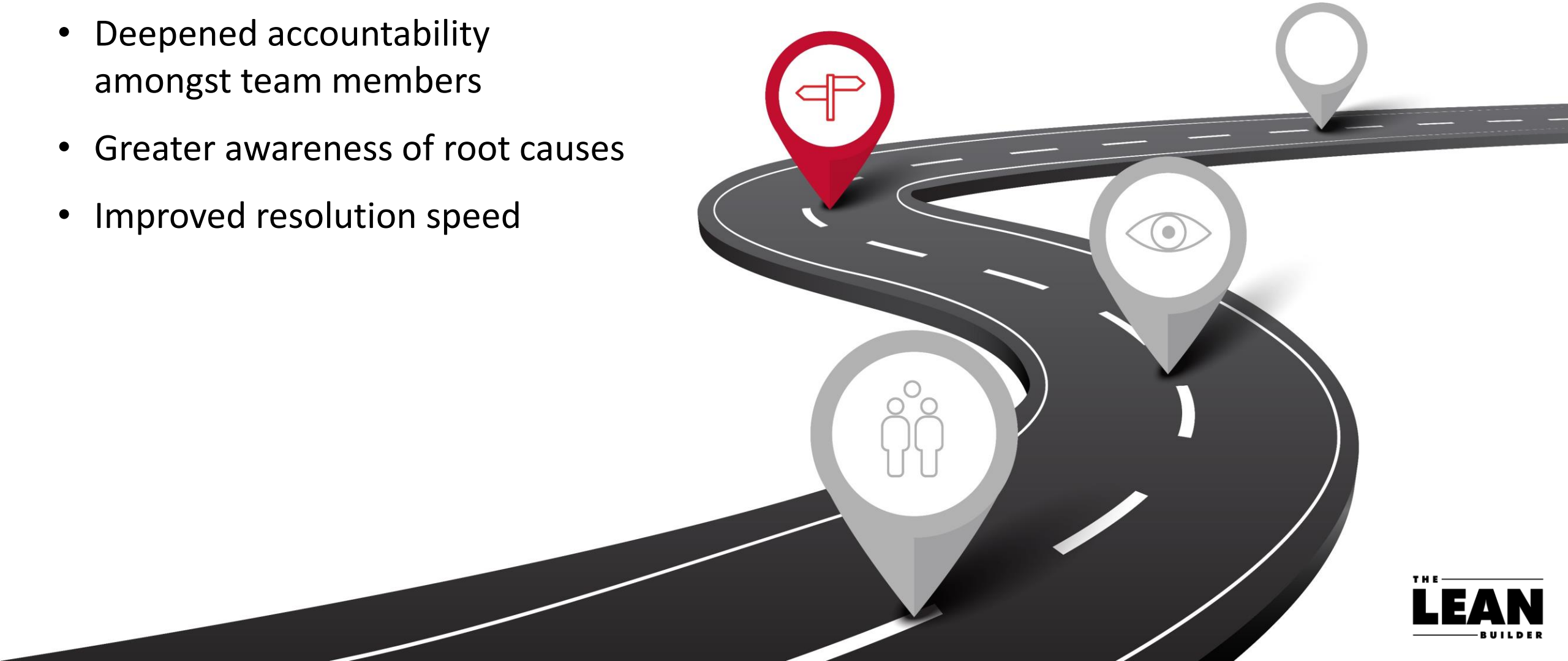


CONSTRAINT RESOLUTION BOARD

#	Issue/Constraint
1	BOLLARDS - WAIT 9/16 EST. DELIVERY
2	RETAINING WALL START 9/16 - 9/20
3	BOSWORTH HAULROAD / DUMPSTER GATE
4	ELEVATOR ✓ LIST ↓ BELOW 9/17 STATE INSPECTION
5	ACCESS CONTROL WIRES → JASON 9/10
6	2 TRIM CONFIRMATION - ANDY K 9/10
7	DOMESTIC WATER - DUMPWAY 9/10
8	PERM GAS SERVICE?
9	9/16 LEAD BLDGS/GLASS INSTALLED - JOHN/BOBBY
10	LINBECK BLDG WORK START 9/16
11	DRILL HOLES ANDY SLABS/CUT OUT SLABS STEVE 9/9
12	SET CABINETS SCRUB ROOM 9/9 - STEVE
13	PAINT GYM CEILING 9/10 START - WALDO
14	FRP 100FT 9/9 - OSCAR / FRP @ CLOSET
15	ROOFING START 9/10 - CHUCK

Managing Constraints

- Deepened accountability amongst team members
- Greater awareness of root causes
- Improved resolution speed



THE LEAN BUILDER

Last Planner System™

What is the Last Planner System™?

THE LEAN BUILDER

The Last Planner System™

1. Master Scheduling
2. Phase Scheduling
3. Look-Ahead Planning
4. Weekly Work Planning
   - Three-Week Look-Ahead
   - Activities/Work to Be Done
   - Manpower Tracking
   - Constraints/Needs
5. Percent Plan Complete

THE LEAN BUILDER

Why use the Last Planner System™?

Remove silos

Push -vs- Pull

Make reliable commitments

Improve project direction and flow

Create trust and accountability

Identify and address root causes for incomplete work

THE LEAN BUILDER

Where do teams go wrong?

Not starting with culture

Focusing on tools – not on people

Lack of training

Only using pull planning

THE LEAN BUILDER

1. Master Scheduling
2. Phase Scheduling
3. Look-Ahead Planning
4. Weekly Work Planning
   - Three-Week Look-Ahead
   - Activities/Work to Be Done
   - Manpower Tracking
   - Constraints/Needs
5. Percent Plan Complete

THE LEAN BUILDER

1. Master Scheduling
2. Phase Scheduling
3. Look-Ahead Planning
4. Weekly Work Planning
   - Three-Week Look-Ahead
   - Activities/Work to Be Done
   - Manpower Tracking
   - Constraints/Needs
5. Percent Plan Complete

THE LEAN BUILDER

Pull Planning

THE LEAN BUILDER

Push -vs- Pull

THE LEAN BUILDER

THE LEAN BUILDER

THE LEAN BUILDER

ACTIVITY	
WALK TO GATE	
MINUTES	HANDOFF
5	GET THROUGH SECURITY

ACTIVITY	
GET THROUGH SECURITY	
MINUTES	HANDOFF
20	GET BOARDING PASS / CHECK IN

ACTIVITY	
GET BOARDING PASS / CHECK IN	
MINUTES	HANDOFF
15	PARK CAR

ACTIVITY	
PARK CAR	
MINUTES	HANDOFF
10	DRIVE TO AIRPORT

ACTIVITY	
DRIVE TO AIRPORT	
MINUTES	HANDOFF
30	PACK BAG

ACTIVITY	
PACK BAG	
MINUTES	HANDOFF
20	N/A

So, now you know you need to leave at 8:20, but there's one problem….

THE LEAN BUILDER

ACTIVITY	
RUN TO GATE	
MINUTES	HANDOFF
3	GET ELECTRONIC BOARDING PASS / CARRY ON BAG

ACTIVITY	
GET THROUGH SECURITY	
MINUTES	HANDOFF
20	GET BOARDING PASS / CHECK IN

ACTIVITY	
GET ELECTRONIC BOARDING PASS / CARRY ON BAG	
MINUTES	HANDOFF
2	UBER TO AIRPORT

ACTIVITY	
UBER TO AIRPORT	
MINUTES	HANDOFF
30	PACK BAG

ACTIVITY	
PACK BAG	
MINUTES	HANDOFF
20	N/A

THE LEAN BUILDER

THE LEAN BUILDER

Before the Pull Plan session:

- Decide on the milestone to pull
- Decide on a facilitator
- Select who should attend
- Pre-Pull
- Set up the meeting room

During the Pull Plan session:

- Introductions & ground rules
- Fill out cards
- Post cards and pull back
- Recap

After the Pull Plan session:

- Document the pull plan
- Update master schedule
- Create the look-ahead

THE LEAN BUILDER

1. Master Scheduling
2. Phase Scheduling
3. Look-Ahead Planning
4. Weekly Work Planning
   - Three-Week Look-Ahead
   - Activities/Work to Be Done
   - Manpower Tracking
   - Constraints/Needs
5. Percent Plan Complete

THE LEAN BUILDER

SKILES GROUP

SCHEDULE - 6 WEEK SNAPSHOT

MRMC Vertical Expansion

ID#	MRMC Vertical Expansion 7/13/19	Week 1 July 15, 2019							Week 2 July 22, 2019							Week 3 July 29, 2019							Week 4 August 5, 2019							Week 5 August 12, 2019							Week 6 August 19, 2019							FACILITY IMPACTS
	Task	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	
1	ENVELOPE	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	5th floor balconies frame/glaze	●	●	●	●	●																																						
3	Coping cap at metal panels	●	●	●	●	●																																						
4	Build back 4th floor west balcony	●	●	●	●	●			●	●	●																																	
5	Spandrel infill glass area B	●	●	●	●	●			●	●	●	●	●																															
6	Metal panels east wing walls								●	●	●	●	●			●	●	●	●	●																									
7	Install stainless steel at west wing wall								●	●	●																																		
8	4 east balcony demo															●	●	●	●	●																									
9	Spandrel infill glass area A															●	●	●	●	●			●	●	●	●	●																	
10	Metal panels at east wing walls																						●	●	●	●	●			●	●	●	●	●										
11	4 east balcony build back																						●	●	●	●	●			●	●	●	●	●			●	●	●	●	●			
12																																												
13	Interior	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
14	Area C																																											
15	South plumbing fixtures	●	●	●	●	●																																						
16	Shot blast concrete	●	●	●	●	●			●	●																																		
17	south light install	●	●	●	●	●			●	●																																		
18	Above ceiling punch at S/R ceilings		●	●	●	●			●																																		
19	Flooring C north			●	●	●			●	●	●	●	●			●	●																										
20	Interior Glazing area C				●	●			●	●	●	●	●			●	●	●	●	●			●	●	●																		
21	Rock sheetrock ceilings								●	●	●	●	●																															
22	Flooring C south											●	●			●	●	●	●	●			●	●	●																		
23	Millwork															●	●	●	●	●			●	●	●	●	●																	
24	Tape/bed and prime S/R ceilings															●	●	●	●	●			●	●																			
25	Flooring C core																	●	●	●			●	●	●	●	●			●	●												
26	Corridor grid																						●	●	●	●	●																
27	Faucets at millwork																						●	●	●	●	●			●	●	●	●	●									
28	Ceiling mounted devices at corridors																													●	●	●	●	●			●	●	●	●	●			
29	First coat final paint																													●	●	●	●	●			●	●	●	●	●			
30	wall protection																																				●	●	●	●	●			thru 8/30
31	Interior	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
32	Area B																																											
33	Grid north	●	●	●	●	●																																						
34	Tile at north restrroms	●	●	●	●	●	●		●	●	●																																	
35	Tile at Core restrooms					●	●		●	●	●	●																																
36	Grilles north								●	●	●	●	●																																
37	Grid south								●	●	●	●	●																																
38	Shot blast concrete									●	●	●	●																																

THE LEAN BUILDER

1. Master Scheduling
2. Phase Scheduling
3. Look-Ahead Planning
4. Weekly Work Planning
   - Three-Week Look-Ahead
   - Activities/Work to Be Done
   - Manpower Tracking
   - Constraints/Needs
5. Percent Plan Complete

SKILES GROUP

THREE WEEK LEAN DASHBOARD:

32 PROJECT NAME

8 TIMEFRAME

PROJECT MILESTONE TRACKING

MILESTONE	DATE	MILESTONE	DATE
RTU 7 START UP	2-11		
MILESTONE	DATE	MILESTONE	DATE

LAST PLANNER TRACKING

3 WEEK LOOK-AHEAD PLANNING

	ACTIVITY / WORK TO BE DONE An identifiable unit of work.	CONSTRAINTS / NEEDS An item or requirement that will prevent an activity from starting, advancing or completing as planned.	PREREQUISITE Work done by others that serves as an input or substrate for work to begin.
1	Duct Work Roof Area C.		
2	Duct Tie INS to Units		
3	Duct Area B Patient Rooms	DUCT RISER & PUBLIC AR	
4	Duct Area B corridor		
5	Insulate AHU #8 doghouse		
6	Chill Water Risers - 5th Area C	TEMP PROTECTION	Open Area C Chase
7	Heating Water Riser - 5th Area A		Open Area A Roof
8	Insulate AHU #7		
9	Insulate AHU #9		
10			
11	AHU - 8 Steam piping Testing		
12	HEATING WATER AREA A OVERHEAD 4" ONLY AHU		MATERIAL
13	HEATING WATER RAISERS FROM 6 TO 5		
14	Sanitary Wast Vent Area A		
15	Domestic water Area B North overhead		
16	Domestic water IN-WALL Area C		WALL FRAMING
17			
18	wire pull MCC TO AHU's		MCC - SHP 11
19	Wire Pull MCC TO CUP		MCC
20	Overhead Rough AHU 7,8,9 (Main Rack)		
21	Penthouse Elec Room Rough		Dryin / MCC
22	AHU 7 Rough		
23	AHU 9 Rough		
24	AHU 8 Rough		Pipe Testing
25	Area B Core (N) overhead Rough		Topout

WEEK:																						
DAY:	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PPC TRACKING			W	TH	F	S	SU	M	TU	W	TH	F	S	SU	M	TU	W	TH	F	S	SU
Y / N	38	40																			
ROOT CAUSE																					
SAFETY	5	5	5	5	5																
QUALITY								5	5	5	5	5									
INSPECTIONS	5	5	5	5	5																
SAFETY								5	5	5	5	5			5	5	5	5	5		
QUALITY			4	4																	
INSPECTIONS	3	3	3																		
SAFETY								4	4	4											
QUALITY	3	3	3																		
INSPECTIONS				3	3			3	3	3	3	3									
SAFETY	3	3	3	3																	
QUALITY		4	4	4	4			4													
INSPECTIONS				4	4																
SAFETY	6	6	5	6	6			4	4												
QUALITY			4	4	4			4	4	4	4	4									
INSPECTIONS															5	5	5	5	5		
SAFETY	M	M																			
QUALITY											4	4			4	4	4				
INSPECTIONS								4	4	4											
SAFETY	4																				
QUALITY															3	3	3	3	3		
INSPECTIONS	2	4	4	4																	
SAFETY					4			2	2	2											
QUALITY											2	2			2	2					
INSPECTIONS																					
SAFETY															3	3	3	3	3		
QUALITY																					
INSPECTIONS																					

THE LEAN BUILDER


THE
LEAN
BUILDER


SKILES GROUP
LAST PLANNER TRACKING
3 WEEK LOOK-AHEAD PLANNING
WORK TO BE DONE
CONSTRAINTS / NEEDS
PREREQUISITE
SKILES GROUP
Baker
THE LEAN BUILDER

LINBECK

2 WEEK LOOK-AHEAD BOARD

PROJECT NAME: | **PROJECT #:**

PPC Root Causes: 1. Inclement Weather 2. Inadequate Manpower 3. Lack of/Failure of Machinery 4. Design (RFI, Submittals, Etc.) 5. Make Ready 6. Materials 7. Poor Scheduling

#	TASKS	Pre Request	PPC %	PPC Y/N	Root Cause #	9 Mon	10 Tue	11 Wed	12 Thur	13 Fri	14 Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	CONSTRAINTS
1	• DFW • TRICE • MAREK • KILLORE • FISK	Safety QC Inspections																		
2	• VADENS • PAFA • FAB FLOORS • ANTON	Safety QC Inspections																		
3	Doors and Hardware	Safety QC Inspections	90%			3	3	3	1	1										MISSING HARDWARE / GEN PAD DOORS
4	Ceiling tile complete	Safety QC Inspections	100%			2	2	2	4	4										
5	Wire pulled in Both lobbys (FIRE ALARM)	Safety QC Inspections	100%			1	2													
6		Safety QC Inspections																		
7	FLOORING LEVEL 1	Safety QC Inspections	90%			5	5	5	5	4	5									EXL WAITING AREAS
8	FLOORING LEVEL 2	Safety QC Inspections	10%							1			5	5	5	5	5			
9	2ND FLOOR COMPLET 1ST COAT	Safety QC Inspections	100%			3	3	3	3	3										
10	PAINT 1ST FLOOR (EXCEPT FINAL COAT)	Safety QC Inspections	100%			2	2	2	2	2										
11	GYM PAINT	Safety QC Inspections																		
12	CALKING. THE EXT WALLS. ON 2ND FLOOR AROUND THE. BLDN	Safety QC Inspections	100%			2	2													
13	COMPLETE BDM 360 ITEMS	Safety QC Inspections	100%					2	2	2										
14	Anton - Millwork (Green area)	Safety QC Inspections	100%				2	2	2	2										
15	level 1 reception desk	Safety QC Inspections	100%				2	2	2											
16	level 1 - Exam room millwork (Purple)	Safety QC Inspections	100%			3	2													
24	level 2 - reception desk	Safety QC Inspections	100%			2														
25	Ceiling device install	Safety QC Inspections	99%			4	4	4	4	4	4									
26	Wall device install	Safety QC Inspections	99%			3	3	3	3	3	3									
27	Site lighting	Safety QC Inspections	20%			Ø	2	2	2	2	2									
28		Safety QC Inspections																		
29	INSTALL FABRIC DUCT	Safety QC Inspections	100%			2	2	2	2	2										
30	ABOVE CEILING GA/AC, GRILLE TRIMOUT	Safety QC Inspections	100%			1	1													
31		Safety QC Inspections																		
32	Finish on Columns	Safety QC Inspections	100%			2	2													
33	Scaffold	Safety QC Inspections	100%				2													

14 DAYS C.O.

MASTER SCHEDULE

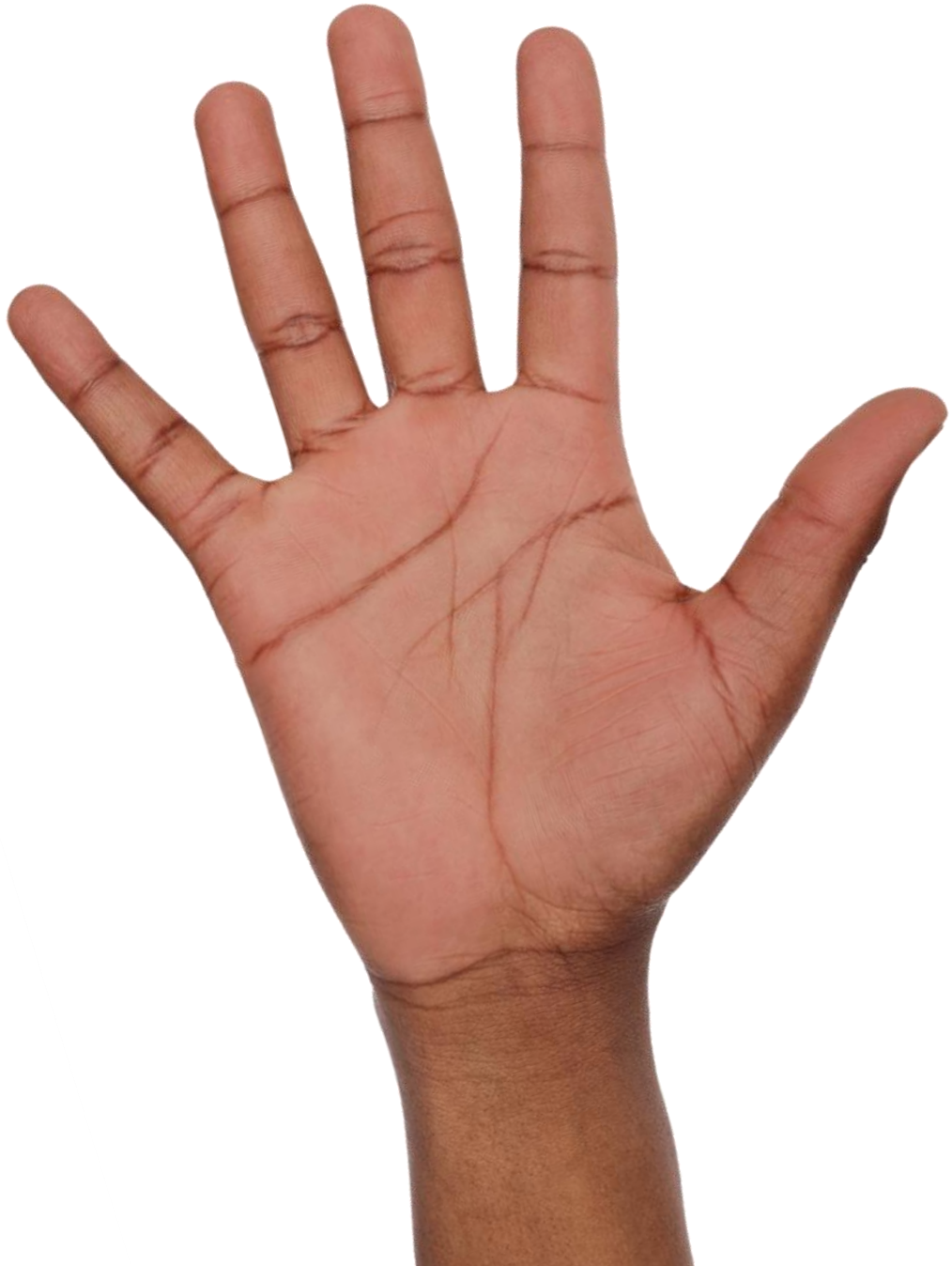
3 3 3

THIS WEEK'S MILESTONES

MILESTONES

#	Date		#	Date	
1	9/10	LIGHTING/RECEP PRECX	8	9/13	ROOF CAP 100%
2	9/11	CCMC PURPLE CEILING INSP	9	9/13	DOOR PRE CX
3	9/11	PLUMB PRE CX	10	9/13	PLUMBING CX
4	9/10	LIFESAFETY/FE PRECX	11		
5	9/12	LIFESAFETY/FE CX	12		
6	9/12	RECEP/LIGHTING CX	13		
7	9/13	ACCESSORIES 100%	14		


SKILES GROUP
3 DECK & DETAIL SEQ 10 LEVEL 4
4 DECK & DETAIL SEQ 10 LEVEL 5
COLS & BEAMS SEQ 11
5 DECK & DETAIL SEQ 11 LEVEL 4 & 5
6 SLAB LEVEL 4 & 5
7 SLAB LEVEL 10 & 11
8 PAVING EAST & WEST
9 BACK FILL RET. WALL
10
11 Overhead Rough In 1st Floor
12 Install Fixtures in MDF, IDF, & Electrical Rm
13 Overhead Rough In 3rd Floor
14 Install Panel Cans and Rack
15 LVL 3 C/S WASTE & VENT
16 LVL 1 C/S WASTE & VENT
17 LVL 2 C/S WASTE & VENT
18 LVL 1 O.H. ROUGH (DUCT)
EMERUS
Bartlett
Cooke
SKILES GROUP
THE LEAN BUILDER



5. Percent Plan Complete

- Activities Completed
- Activities Promised
- Weekly Team Percentage
- Root Cause Categories
- Root Causes for Work Missed
- 12-Week Snapshot

THE LEAN BUILDER

SKILES GROUP

THREE WEEK LEAN DASHBOARD:

32 PROJECT NAME

8 TIMEFRAME

PROJECT MILESTONE TRACKING

MILESTONE	DATE	MILESTONE	DATE
RTU 7 START UP	2-11		
MILESTONE	DATE	MILESTONE	DATE

LAST PLANNER TRACKING

3 WEEK LOOK-AHEAD PLANNING

	ACTIVITY / WORK TO BE DONE An identifiable unit of work.	CONSTRAINTS / NEEDS An item or requirement that will prevent an activity from starting, advancing or completing as planned.	PREREQUISITE Work done by others that serves as an input or substrate for work to begin.
1	Duct Work Roof Area C.		
2	Duct Tie INS to Units		
3	Duct Area B Patient Rooms	DUCT RISER & PUBLIC AR	
4	Duct Area B corridor		
5	Insulate AHU #8 doghouse		
6	Chill Water Risers - 5th Area C	TEMP PROTECTION	Open Area C Chase
7	Heating Water Riser - 5th Area A		Open Area A Roof
8	Insulate AHU #7		
9	Insulate AHU #9		
10			
11	AHU - 8 Steam piping Testing		
12	HEATING WATER AREA A OVERHEAD 4" ONLY AHU		MATERIAL
13	HEATING WATER RAISERS FROM 6 TO 5		
14	Sanitary Wast Vent Area A		
15	Domestic water Area B North overhead		
16	Domestic water IN-WALL Area C		WALL FRAMING
17			
18	wire pull MCC TO AHU's		MCC - SHP 11
19	Wire Pull MCC TO CUP		MCC
20	Overhead Rough AHU 7,8,9 (Main Rack)		
21	Penthouse Elec Room Rough		Dryin / MCC
22	AHU 7 Rough		
23	AHU 9 Rough		
24	AHU 8 Rough		Pipe Testing
25	Area B Core (N) overhead Rough		Topout

WEEK:																						
DAY:	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PPC TRACKING			W	TH	F	S	SU	M	TU	W	TH	F	S	SU	M	TU	W	TH	F	S	SU
Y / N	38	40																			
ROOT CAUSE																					
SAFETY	5	5	5	5	5																
QUALITY								5	5	5	5	5									
INSPECTIONS	5	5	5	5	5																
SAFETY								5	5	5	5	5			5	5	5	5	5		
QUALITY			4	4																	
INSPECTIONS	3	3	3																		
SAFETY								4	4	4											
QUALITY	3	3	3																		
INSPECTIONS				3	3			3	3	3	3	3									
SAFETY	3	3	3	3																	
QUALITY		4	4	4	4			4													
INSPECTIONS				4	4																
SAFETY	6	6	5	6	6			4	4												
QUALITY			4	4	4			4	4	4	4	4									
INSPECTIONS															5	5	5	5	5		
SAFETY	M	M																			
QUALITY											4	4			4	4	4				
INSPECTIONS								4	4	4											
SAFETY	4																				
QUALITY															3	3	3	3	3		
INSPECTIONS	2	4	4	4																	
SAFETY					4			2	2	2											
QUALITY											2	2			2	2					
INSPECTIONS																					
SAFETY															3	3	3	3	3		
QUALITY																					
INSPECTIONS																					

THE LEAN BUILDER

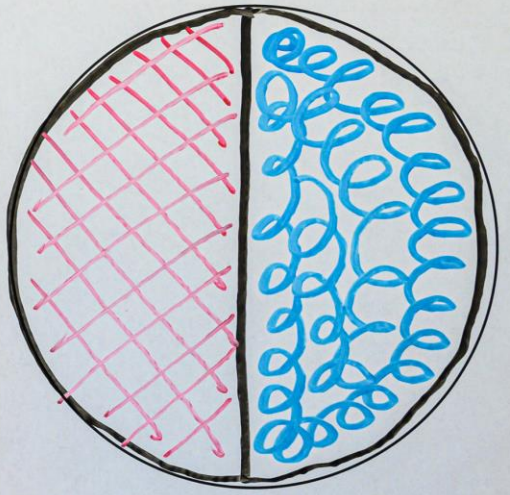
LINBECK

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
	3/23	8/30	9/6			
# of Operations Promised	20	20	23			
# of Operations Completed	17	18	21			
% Team Performance	85%	90%	91%			

REASONS PROMISED ITEMS NOT COMPLETED

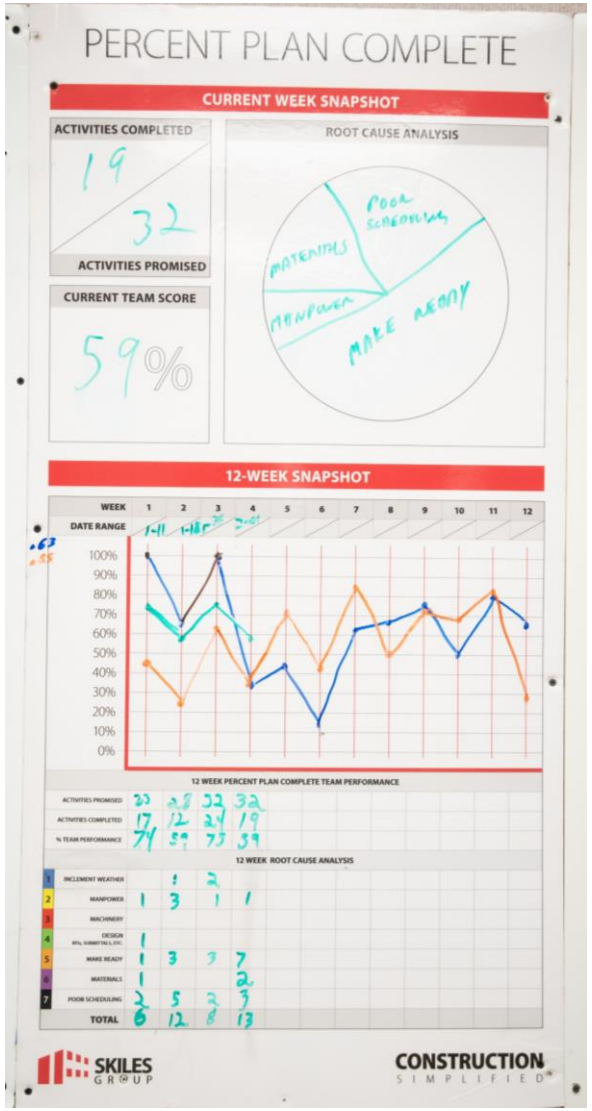
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Inclement Weather						
Inadequate Manpower		1				
Lack of/Failure of Machinery						
Design (RFI, Submittals, Etc.)						
Make Ready	3	1				
Materials			1			
Poor Scheduling			1			
Total						

Root Cause Analysis: % of Promised Items Not Completed
For the week of:



LEGEND

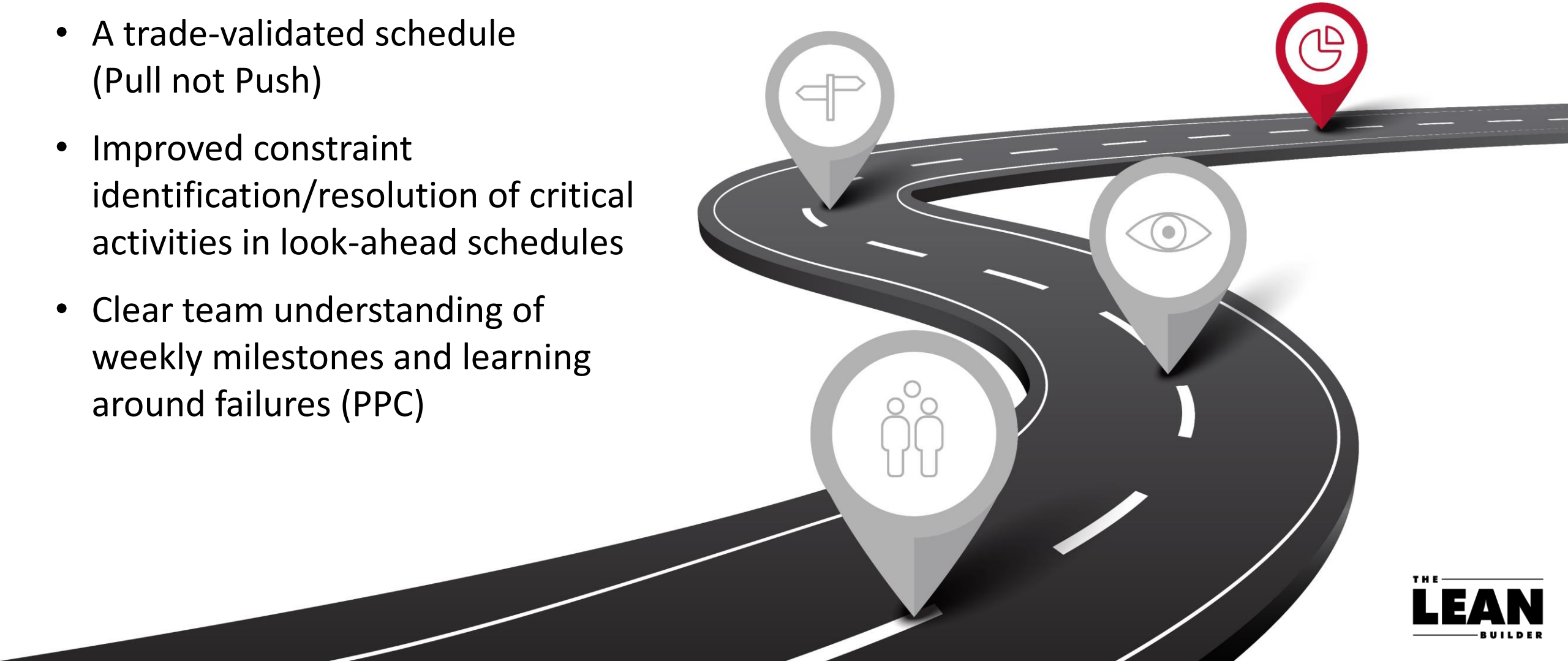
Inclement Weather		Make Ready
Inadquate Manpower		Materials
Lack of/Failure of Machinery		Poor Scheduling
Design (RFI, Submittals, Etc.)		



THE LEAN BUILDER

Last Planner System™

- A trade-validated schedule (Pull not Push)
- Improved constraint identification/resolution of critical activities in look-ahead schedules
- Clear team understanding of weekly milestones and learning around failures (PPC)



THE LEAN BUILDER

Keyan Zandy
Keyan@TheLeanBuilder.com

Joe Donarumo
Joe@TheLeanBuilder.com