

BEC
CONFERENCE™

MARCH 2-4, 2025
LAS VEGAS
GLASS.ORG

What Lean Construction Means for Your Glazing Firm



Page 10: Contract Glazing Greatness

“Contract glazing is not a business for the faint of heart...one mistake or one bad job can bring DEATH.”

- Debra Levy, glass.com

BEC
CONFERENCE™

Speaker Introduction



Dave MacNeel
Principal & Lean
Construction Coach

- **Founded OPL Consulting in 2013**
- **37 years in Construction Field Ops**
- **20+ Years as a Trade Contractor**
- **Applying Lean since 2001**



Objectives

- **What is Lean Construction?**
- **Why Do I Need Lean Construction?**
- **How Do I Get Started?**





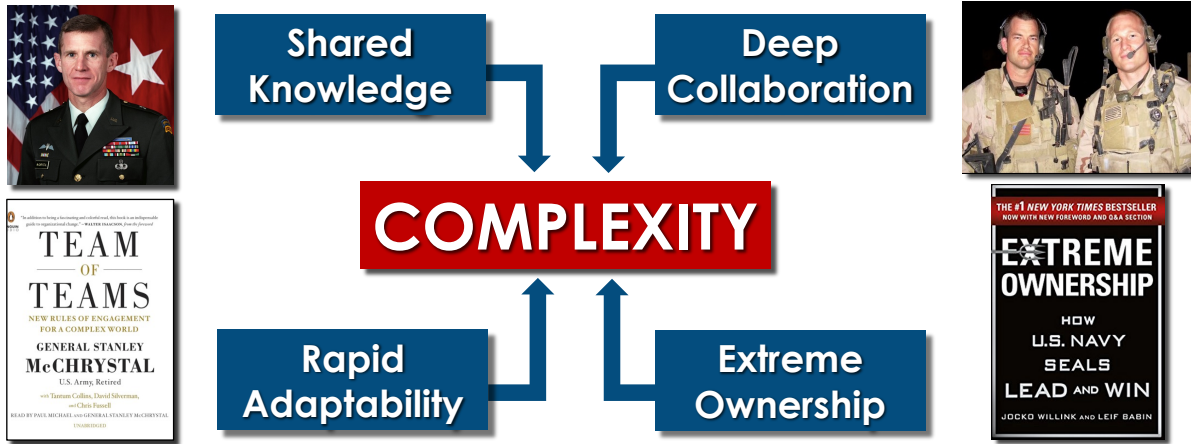
Various Lean Projects – Las Vegas, Seattle, Los Angeles, New York



Under Construction – Las Vegas, Honolulu, Seattle, Los Angeles, New York



What PROBLEM Are We Trying to Solve?



BEC
CONFERENCE™

What is Lean? (Not an Acronym)

Definition:

Doing **WHAT** is needed, **WHEN** it is needed, with the **MINIMUM** amount of Time, Material, Labor, Equipment, Space, and Expense.

BEC
CONFERENCE™

What is Lean Construction?

Core Principals:

- **Continuous Improvement & Respect for People**
- **Value, Waste, & Flow**
- **Reliability & Predictability**



DHK Presbyterian Hospital – New York, New York

BEC
CONFERENCE™

Why Lean Construction?

At the Project Level:

- **Faster Completion**
- **Enhanced Quality**
- **Better Safety**
- **Less Stress**



Universal Studios Cabana Bay – Orlando, Florida

BEC
CONFERENCE™

Why Lean Construction?

Benefits for Contractors

- Increased Efficiency
- Cost Savings
- Competitive Advantage



1271 Avenue of the Americas – New York, New York



Two Versions of Lean:

1. 'SHOP' Lean ✓

2. 'INSTALLATION' Lean ✗

Palo Alto Medical Foundation – San Carlos, California



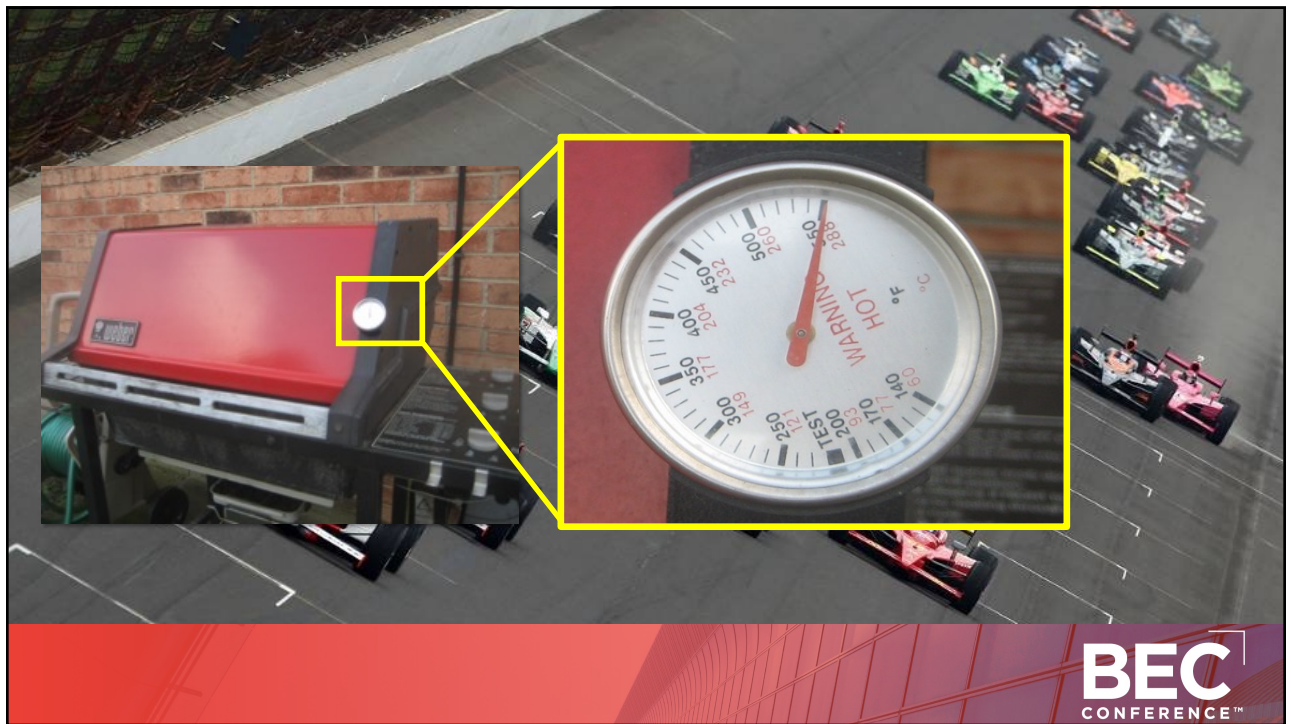
Historical "Lean"

Efficiency Tracking

- Cost Reports
- Labor Reports
- Schedules

J-T-D COST/UNIT										553								
J-T-D COST										1200								
J-T-D QUANTITY										.461								
WI	CC	AR	Description	UM	Quantity	Revised Budget	Period J-T-D Quantity	Revised Budget Cost/Unit	Period J-T-D Cost/Unit	Rev'd Cost	Period Cost	Percent Complete	J-T-D M	J-T-D				
100			CONT FTGS															
100	200		00 FORM	SF	1000	120	1800	0.461	1.067	0.461	460	128	88	111	Q	86		
100	401		00 PLACE	CY	56	27	80	16.091	1.741	11.151	608	128	991	165	Q	81		
Totals for Work Item: 100													1288	256	1464			
110			SPREAD FTGS															
110	200		00 FORM	SF	5042		5042	0.235	0.000	0.108	1164	947	100	Q	83			
110	401		00 PLACE	CY	372		372	8.688	0.000	10.127	3232	1276	34	Q	85			
Totals for Work Item: 110													4416	2223				147
120			BOLSTER FNDS															
120	200		00 FORM BOLSTER SIDES	SF	443			3.007	0.000	0.000	1332					0		
120	307		00 FORM POCKETS	LF	605			3.008	0.000	0.000	1800					0		
120	364		00 METAL CHANNEL	LF	186			18.000	0.000	0.000	3451					0		
120	346		01 METAL ANGLE	LF	130			3.151	0.000	0.000	407					0		
120	400		00 PLACE BOLSTERS	SF	1200			0.370	0.000	0.000	444					0		
120	400		00 PLACE ROD BARS	SF	1200			0.128	0.000	0.000	160					0		
120	600		00 FINCURE BOLSTERS	SF	1200			0.428	0.000	0.000	513					0		
Totals for Work Item: 120													8167					

Type I Construction	Activity	Start	End	Actual	Estimate	Unit	Cost	Quantity	Rate	Notes
21.00.00.00	Field Work	21.00.00.00	21.00.00.00	21.00.00.00	21.00.00.00					
21.00.00.01	Field Work - Foundation and Foundation	21.00.00.01	21.00.00.01	21.00.00.01	21.00.00.01					
21.00.00.02	Field Work - Wall Construction	21.00.00.02	21.00.00.02	21.00.00.02	21.00.00.02					
21.00.00.03	Field Work - Floor Construction	21.00.00.03	21.00.00.03	21.00.00.03	21.00.00.03					
21.00.00.04	Field Work - Roof Construction	21.00.00.04	21.00.00.04	21.00.00.04	21.00.00.04					
21.00.00.05	Field Work - Mechanical	21.00.00.05	21.00.00.05	21.00.00.05	21.00.00.05					
21.00.00.06	Field Work - Electrical	21.00.00.06	21.00.00.06	21.00.00.06	21.00.00.06					
21.00.00.07	Field Work - Plumbing	21.00.00.07	21.00.00.07	21.00.00.07	21.00.00.07					
21.00.00.08	Field Work - HVAC	21.00.00.08	21.00.00.08	21.00.00.08	21.00.00.08					
21.00.00.09	Field Work - Fire Protection	21.00.00.09	21.00.00.09	21.00.00.09	21.00.00.09					
21.00.00.10	Field Work - Security	21.00.00.10	21.00.00.10	21.00.00.10	21.00.00.10					
21.00.00.11	Field Work - Other	21.00.00.11	21.00.00.11	21.00.00.11	21.00.00.11					



EFFICIENCY		INFORMATION			
JOB-TO-DATE MH	37202 2-22-04	38,359 2-29-04	33335 2/1	134787 2-8-04	1177 MHRS 35964 2-15-04
OVERALL-EFF.	106↑	106-	104-	102↓	102-
DIRECT/FIELD LAB. EFF.	113↑	113-	111↓	111-	112↑
MAIN DECK	102↑	103↑	96↓	96-	101↑
MEZZ DECK	124↑	122↓	131↓	118↓	122↑
MAIN COLUMNS	105↓	105-	97↓	99↑	106↑
PERIM GR BM	118↓	119↑	121-	121-	122↑
PERIM GR WALL	-	-	-	-	-
SUB	-	-	-	-	-
SPREAD FTG/PILE CAPS	116-	114↓	115-	115-	116↑
WALLS ON MAIN	139↓	154↑	139↓	140↑	140-
MISC (ALL)	68↑	68↑	65↑	65-	65-

LAST ADVANCE
 1) MAIN D
 2) MAIN T
 3) MEZZ
 4) FORM
 5) PLACE
 DEC
 1) FORM
 2) MEZ
 3) RUB
 4) DEFI
 5) MEZ
 UP
 - 25/04
 1-2 WKS
 ON 3/4

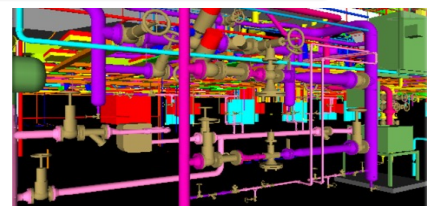
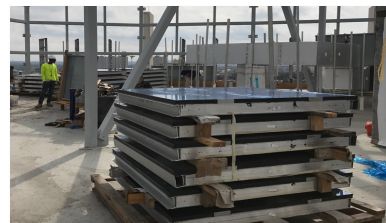
MARCH 3/4/04
 For Tomorrow - 7 AM per / 7:30 AM MO
 - 4: TOPT



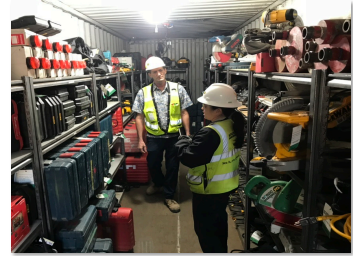
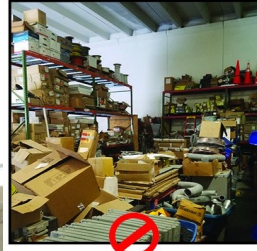
Lean at the Field Level

Lean Tools:

- Just-In-Time Delivery
- BIM Modeling & AR
- Prefabrication & Kitting



Starting Point : 5S



BEC
CONFERENCE™

Next Step: The 8 Wastes - DOWNTIME



Defects



Overproduction



Waiting



**Non-utilization
of talent**



Transportation



Inventory



Motion



Extra processing

Goal:

ELIMINATE

SIMPLIFY

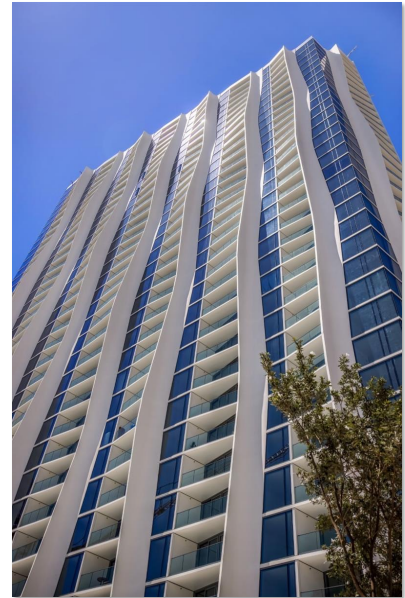
REDUCE

BEC
CONFERENCE™

The Operating System

Last Planner System®

- Milestone Planning
- Phase Pull Planning
- Make-Ready Planning
- Weekly Work Planning
- Daily Production Check-Ins
- Learning & Improving



Ward Village Ko'ula Tower – Honolulu, Hawaii

BEC
CONFERENCE™

Case Study Results: Lean vs Traditional

- Duration: 3 Months Faster
- Productivity: 12% Fewer Hours
- Overtime: 50% Less
- Peak labor: 150 Fewer Craft Workers
- Total Cost: 17% Less (~\$6MM)

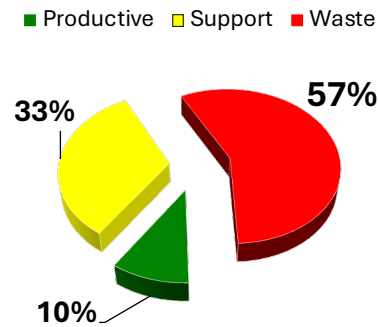
Thyssen-Krupp Steel Mill – Mt Vernon, Alabama

BEC
CONFERENCE™

Industry Drivers

What's Driving Lean?

- Client Demand
- Competition
- Technology
- Waste



Wilshire Grand – Los Angeles, California | CII Study

BEC
CONFERENCE™

Implementing Lean

Immediate Take-Away Strategies:

- Apply 5S & Eliminate Waste
- Implement Last Planner System
 - Collaborative Weekly Planning
 - Daily Production Check-ins



PNC Tower Renovation - Cincinnati, Ohio

BEC
CONFERENCE™

Implementing Lean

Long-Term Strategies:

- Develop a Continuous Improvement Mindset thru Training & Education
- Focus on Deep Collaboration
- Predict, Measure, & Improve (PDCA)
- Develop Internal Lean Champions



Universal Studios Cabana Bay – Orlando, Florida



Continuous Improvement ✓
Last Planner System® ✓
Optimize the Whole ✓
Respect for People ✓
Plan-Do-Check-Act ✓
Generating Value
A3 Thinking
Little's Law
Reliability
Takt Time
Pull vs Push
The 8 Wastes ✓
Predictability ✓
One-Piece Flow
Level Workflow
In-Place Quality
Standardized Work
Just-in-Time Delivery ✓

Takt Planning
Relational Contracting
Shared Risk & Reward
Choosing by Advantages
Continuous Improvement ✓
Integrated Project Delivery

Percent Plan Complete
Weekly Work Planning ✓
Make-Ready Planning ✓
Prefabrication ✓
Commitments
Daily Huddles ✓
Andon Chord
Prototyping
Learning ✓
Variation
Level Flow
Constraints ✓
Takt Control
BIM / VDC / VR ✓
McLeamy Curve
5S & Visual Control ✓
Basic Action Workflow
Production System Design

World of Lean Construction

Big Rooms & Work Clusters
Network of Commitments
Conditions of Satisfaction
Target Value Delivery
Milestone Planning ✓
Phase Pull Planning ✓



Closing Thoughts & Resources

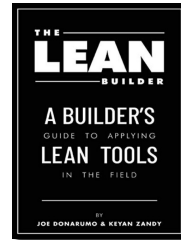
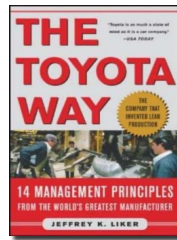
- **Become a Life-Long Learner**
- **Start Small**
- **Get Help**



David MacNeel
Cell: 513-500-4511
dmacneel@onpointlean.com



Lean Construction Institute
Transforming Design and Construction
Leanconstruction.org



Contact QR

