Getting Better at Getting Better

Lean Thinking for Residential Construction

Tedd Benson
Kevin Bittenbender
Andrew Dey
More is Better

(Except for the cost)
Mid-Course Correction
1988-90

Mastering the Craft of Building
  Depends on
Mastering the Craft of Business
  Which is about
Mastering Process
W Edwards Deming
1900-1993

"We have learned to live in a world of mistakes and defective products as if they were necessary to life. It is time to adopt a new philosophy in America."

The American who taught Japanese about Quality
Deming’s 14 Points

- Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
- Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
- Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
- End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust.
- Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
- Institute training on the job.
- Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of an overhaul, as well as supervision of production workers.
- Drive out fear, so that everyone may work effectively for the company.

A bad system will beat a good person every time.

– W. Edwards Deming

W. Edwards Deming

Out of the Crisis
It is not enough to do your best; you must know what to do, and then do your best.

(W. Edwards Deming)

Quality is pride of workmanship.

W. Edwards Deming

Innovation comes from people who take joy in their work.

W. Edwards Deming

"Your system is perfectly designed to give you the results you're getting."

- W.E. Deming

“IN GOD WE TRUST, ALL OTHERS MUST BRING DATA.”

W. Edward Deming
It is not necessary to change. Survival is not mandatory.

W. Edwards Deming
"Buildings have to breathe" ×

- Buildings have to dry; **people** have to breathe
- You can’t control what you can’t contain
- You can’t manage what you can’t measure
- Build Tight and Ventilate Right!

“**You can’t manage what you don’t measure.**

- W. Edward Deming
THE TOYOTA WAY

Respect for People

Respect
- Respect others
- Make effort to understand each other
- Take responsibility
- Do your best to build mutual trust

Teamwork
- Stimulate personal and professional growth
- Share opportunities for development
- Maximize team and individual performance

Continuous Improvement

Teamwork
- Continuous improvement of business operations through innovation

Kaizen
- Challenges to be met with courage and creativity for the long term

Genchi Genbutsu
- Go to the source to find the facts to make correct decisions
For $20,000
For $20,000
The Toyota Production System
- Customer Focus
- People Centered
- Safety, Quality, Delivery, Cost
- Morale
- Process Orientation

Lean Manufacturing
- Built-In-Quality
- Automatic Stops
- Five Why’s
- Man and Machine

Just in Time
- Continuous Flow
- Pull not Push
- Quick Changeover
- “Beat” Time
- Integrated logistics

Highly Motivated People

Standardized Work
- Visual Management
- Demand and Volume

Leadership
- Urgency
- Accountability

LEAN THINKING
Getting Better at Getting Better, Part II:
Lean Thinking
In The Shop

NESEA Building Energy Boston 2017

KEVIN BITTENBENDER,
Company Steward, Bensonwood Homes
LEAN FOR CUSTOM JOBS
We’re not making widgets!
FIND WHAT REPEATS

REPEATING INTERSECTIONS

REPEATING JOINERY

REPEATING TERMINOLOGY
USE LEAN TOOLS

- 5S (Basic Organization)
- Visual Controls
- Reducing Batch Size
- Point of Use Storage
- Creating Flow
- Pull Systems
Elements of 5S (Organization)

Sort

Set in Order

Shine

Standardize

Sustain
5S

SORT

“When in doubt, throw it out”
5S

SET IN ORDER

- A place for everything and everything in its place.
5S

SET IN ORDER

Shadow Boards

Labels

Build storage to fit
5S

SET IN ORDER

Existence is better than perfection
5S

SHINE
5S

Looks good........ now how do we keep it this way?

Standardize (4th{s})

&

Sustain (5th{s})
5S

Example: Posted 5S standards
5S

Example:
Check lists/SOP’s are Standards

Procedure for Preparing splines

Things to do first
- Get list
- Check for proper species
- Look for detail type and keep this in mind when getting stock (see spline detail sheet)
- Double check thickness with job cap.

Getting rough stock
- Check list for thickness / making sure that we got it.
- Make roughing list - i.e., length & with
- Bring stock into shed
- Rough cut stock 3” over list On upsaw
- When cutting stock, grade / no checks / rot / or visible loose knots
- Cut at least one extra of longest length
- After cutting mark length on end grain with marker
- Pack on cart, bring to lower shop

Milling stock
- Mill 1” to 1.1/4” over width on band saw
- Face and edge joint on jointer (making sure not to joint below thickness)
- Plane to speck. Note you should have double checked this with job captain
- With a fat ripping blade, rip splines to width on table saw
- Using chop saw or tiger stop would be best (making sure you check for square) cut to length
- Label the top non-visible edge of spline (check speck sheet to find nve)
Weekly 5S Sustain Practices

Area #2
- CNC Mortiser, Hollow Chisel, 2 Shapers, Chop Box, Bench Top Mortiser, Tenoner

Record dates 5s is complete (write month for Monthly check)

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5S routine
- Each Month—Blow out outlets -- Inspect fire extinguishers (2) -- Pin in place? gauge in the green? Turn upside down) -- Inspect extension cords – Check & replace lightbulbs – Check & fill Oil cups on tenoner (30 wt)

Weekly
- Blow off all machines
- Empty full garbage and wood cans
- Sweep
- Purge scrap wood
- Empty Shop-Vac
- Check and fill shadow board
- Make sure jigs are organized

Improvements to be made
- Get clipboard on two shapers. Move Sander down the shop. 5S the jig storage area behind the mortiser, 5S the jig storage on the wall behind the shaper (after wall is insulated and sheathed), Fix leak on South wall and insulate & finish. Remove garage door supports. Add broom station by old phone jack
5 Necessary Conditions for SUSTAIN

1. Development of new awareness and skills
2. Support from management
3. Ongoing communication
4. 5S is part of daily work
5. Total Employee Involvement (TEI)
Visual Controls

- Labels
- Shadow boards
- Lines on floor
- Pictures
- Andon Lights
- Kanban
Visual Controls
Set Up Reduction