

Introduction

LeanPlan Workout

*The voyage of discovery
is not in seeking new landscapes but
in having new eyes.*

Marcel Proust

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An Epiphany ...

- 🕒 NAHB 2009
- 🕒 My usual rant about architects & engineers
- 🕒 A frustrated participant yelled out ...

- 🕒 Some evidence ...



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2010: Survey Highlights of 497 Trades

- 🐛 Only 12.5% of responding trades say they get all the info needed to do an accurate bid
- 🐛 Half said plans are “pretty good” to build from
(more a statement of what is “acceptable” than of thoroughness)
- 🐛 ~20% of plan errors or omissions add a trip, at an average reported cost of \$201/trip
- 🐛 ...yet builders are charged only 8% of the time
 - 🐛 For every trip you pay for, **they eat \$2500 !!!**
- 🐛 Only 4% of trades said they received lot-specific plans all or most of the time



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Common Trade Comments

- 🐛 “What can builders do to improve plans?”
 - 🐛 Map out all of the mechanical in stud spaces, etc
 - 🐛 Details, details, details...
 - 🐛 Ask suppliers what information is pertinent to each trade and include it on the plans every time.
 - 🐛 Complete them
 - 🐛 Include critical dimensions - don't rely on us to scale it correctly
 - 🐛 Make sure changes are correct, legible , and detail what is being built... NO FIELD GUESSING!!!



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Plans to Working Drawings: How it *usually* works

1. Architect (or CAD guy or the boss) designs plans & elevations with basic measurements
2. Management/Marketing ~~mess with it~~ “approve”
3. Build Model
4. Mess with it
5. Start production
6. Mess with it
7. Trades do their work-arounds
8. Keep messing with it
9. Trades do more work-arounds
10. Etc. etc. etc.



Plans to Working Drawings: How it *should* work

1. Architects design basic plans & elevations
2. Management/Marketing design approval
3. Convert plans to Stage 1 working drawings with required measurements (“CAD Blockout”)
4. Initial plan review with trades: **Front end & Back end**
5. Produce Stage 2 working drawings with **full** details for stairs, corners, cabinets, mechanicals, etc.
6. 2nd plan review with suppliers & trades: **Front end & Back end**
7. Produce Stage 3 Working drawings
8. Build Model (or prototype)
9. Field review: front end, back end, adjust build



Why would you go to *that* much trouble?

1. To save time
2. To reduce mistakes & rework all through the process
3. To free up your field supervisors
 1. Maybe they can get in every house, every day?
 2. Maybe they will have time to handle customers?
4. To build a better quality product, right first time
5. To increase customer satisfaction
6. To make more money



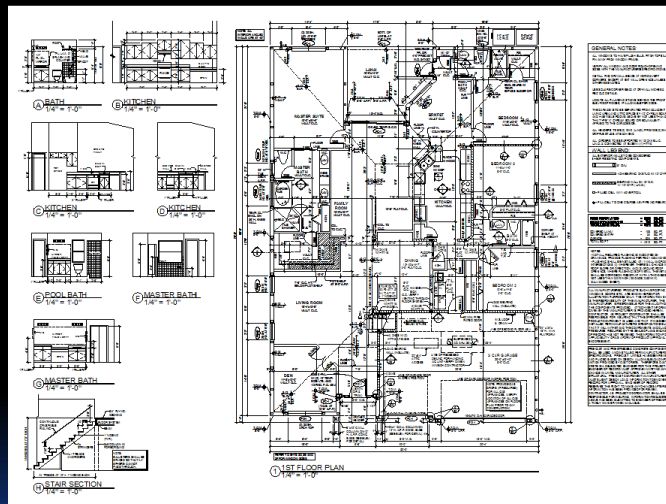
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Fleshed out working drawing: Impressive?

How many could meet this standard?

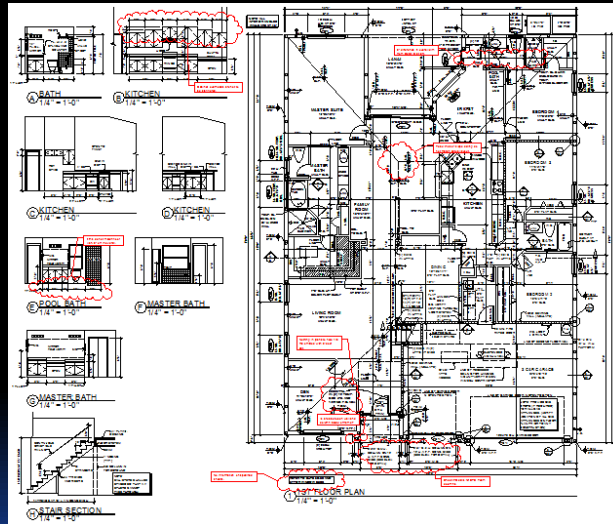
It's good, but not *GREAT*



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After Analysis

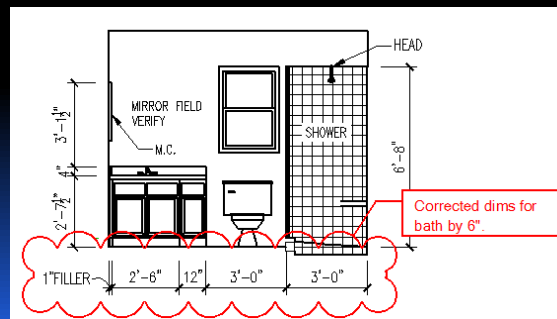
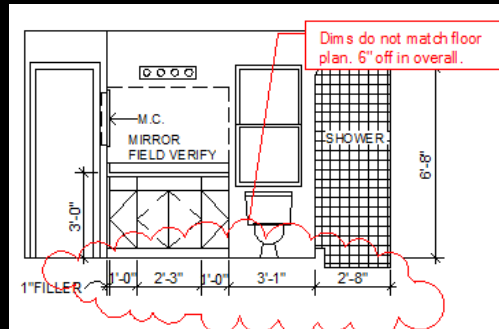


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Each mistake adds cost in the field

- ❖ Shower 4" off
 - ❑ Pan won't fit
 - ❑ Customer?
- ❖ X-rated window to PG-rated window
- ❖ Vanity won't fit
- ❖ Countertop won't fit



Multiple mistakes in roofline

Peak lines of slope ceiling do not match actual layout.

Could not be built as depicted

Fixing at this stage saves rework, field time, & schedule day(s)

Corrected ceiling slope lines to match truss layout.

More mistakes More cost More time lost

FRONT ELEVATION
1/4" = 1'-0"

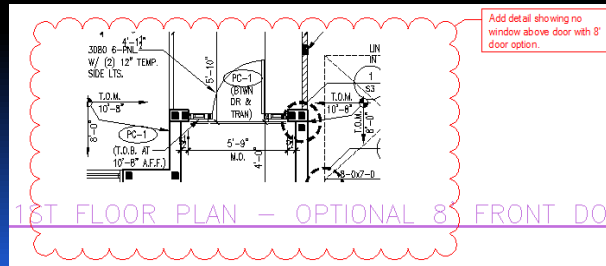
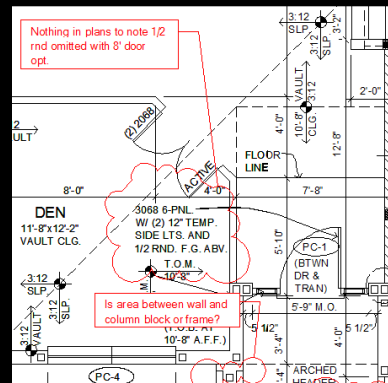
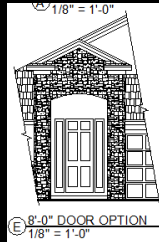
Filler plan calls for CMU columns.

Corrected column material to match elevation. Was calling out CMU.



"Cool Door" Option

- Added ... when?
- Plans not adjusted
- Lots of surprises in the field



Lean Design Standards

Every company must establish their own requirements. A few essentials.

1. Foundation efficiency
 - Footers, corners, depths, piers, columns, et al
2. Even dimension analysis
 - Walls, halls, lumber, trim, flooring, et al
3. Complete Load analysis:
 - Headers, truss, rafters, corners, wall intersections, supports, et al
4. Drywall utilization analysis
 - A. Square feet wall & ceiling/square feet floor
 - B. Square feet purchased/square feet floor
5. Roof pitch analysis (7-8 rule)
6. Material choice challenge/comparison
7. Window choice challenge/comparison



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The Muddy Shoes Architect

🕒 Todd Hallett:

- 📄 Unusual credentials
- 📄 Why he gets it ... and others do not



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The problem ...

- 🕒 Architects aren't trained to contain cost
- 🕒 99% of cad operators rarely have the skills & knowledge required to do the analysis (not trained for this)
- 🕒 Most Engineers don't know what their job is
- 🕒 A new design philosophy

*Perfection is achieved,
not when there is nothing more to add,
but when there is nothing left to take away.*

Antoine de Saint-Exupery



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Lean Design: First Steps

1. Face the brutal facts ...
 - A. Good is the enemy of great
 - B. Your trades might tell you, but there are two barriers
 - A. Fear ... will they tell you the baby's ugly?
 - B. Many have simply never seen truly good working drawings!
2. Adopt the new Design paradigm
 - A. Marketing, Architecture, CAD, Purchasing & Estimating, Suppliers & Trades, Construction – all involved
 - B. Plan reviews with suppliers & trades are **fundamental**
3. Understand and measure TOTAL COST
 - A. Requires an understanding of Lean Principles
 - B. Requires measurement of field impact that 99% of you do not have today



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Lean Design: First Steps

4. Create and follow your Lean Design Standards
 - A. Develop manual & process
 - B. Demand adherence (NOTE: Sr. Mgt is the biggest obstacle)
5. Understand and eliminate the major Design failures
 - A. Technical failure
 - B. Feature creep
 - C. Transition to Execution
6. Balance Complexity and Capacity
 - A. Ask you staff to be brutally honest
 - B. Ask your suppliers & trades to be brutally honest
 - C. *"You can't build your company on the backs of heroes"*



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Lean Design: First Steps

7. Simplify, simplify, simplify

- A. Reduce plans, options & selections wherever possible
- B. The goal is NOT to dumb down the houses, making them hard to sell.
- C. The goal is to provide true value that customers will pay for.

What we know after 65 Lean Implementations:

More than 50% of all product and process waste can be eliminated up front through a great design and specification process.



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The LeanPlan Workout

- 🏠 Another structured process
- 🏠 Provides “New Eyes”
- 🏠 The chance you’ve all been waiting for
- 🏠 4 plans, a LOT of questions ... and ...
... you get to color !



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... as Dr. Deming always said,

All I have to Offer you is Profit

Design Lean



Build Lean

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