6 Lessons for High Performance Subcontracting

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Skander Spies, Energetechs
Skander Spies

Engineering

Mountains

Hands On

Committed
Energetechs Construction

Framing

Insulation

Windows

HVAC

Audits/Consulting
Goals

“Blow Away” Clients (expectations)

Mistakes

Realism

Cost Effective

© Natural Dwellings
Pick Two

Low Cost

Fast

Energetechs

High Quality
Why Thermal Holes Important?

Avg. \( U = \frac{(U_1 \times A_1) + (U_2 \times A_2) + \ldots}{\text{Total Area (A)}} = \frac{(.026 \times 990) + (1 \times 10)}{1,000} \)

\[ = \frac{35.74}{1,000} = .036 = \text{R27.8 = 27% less than R-38} \]
Construction by People

Good People = Good Quality, NOT Perfect

Well Trained

Fit

Dedicated
Agenda

Mechanical Noise
MiniSplits
Framing for Insulation
Envelope Transitions
Cellulose
Vaulted Ceilings

Discussion
Mechanical Noise

Location

Frequency

Isolation

Equip Type
Mechanical Noise: Location

Concrete floors

Bedroom/proximity

Stairs/Chases
Mechanical Noise: Duct Noise

Straight round ACCA!

Grille noise

Silencers
Mechanical Noise: Frequency

Low Freq.
Mechanical Noise

Low Freq...

Walls...

Overhangs...
MiniSplit
HVAC
“Feel”
Timing
Volume
Service

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MiniSplit HVAC Service
Performance Framing

Order of Operations

Think Insulation

Less Wood
Operations

Avoid unfillable gaps
Reduce Framing

Stay on top of your framers

Reduce wood

Faster!
Framing to
Insulate

Limit horizontals

Align studs

Limit “micro cavities”
Framing to Insulate
Envelope Transitions

Air

Water

Thermal
Envelope Transitions

Air

Water

Thermal
Envelopes
Transitions
Envelope
Transitions
Air
Water
Thermal
Envelope Transitions

Who is responsible?
Cellulose Installation

Dense vs Wet Finishing

Install Realism
Cellulose Settles

Dense-pack settles

Smart blocking

Better planning with framers
Cellulose Settles
Wet-spray settles
Smart blocking
Know when to use which
Cellulose Installation

Touch up w foam

Netting

Trimming
Cellulose
Limits
Cellulose Limits
Vaulted Ceilings: Issues

Venting

High R Value

Air Sealing

Expensive
Vaulted Ceilings: Issues
Vaulted Ceilings: Solutions

- Shingles
- Roofing paper
- Minimum R-50 rigid insulation in two or more layers with horizontal and vertical joints staggered
- Nail base for shingles (plywood or OSB) screwed through rigid insulation to wood decking or timber rafters
- Air barrier membrane
- Wood decking
- Timber rafter or exposed joint
Vaulted Ceilings: Solutions

Cellulose < 3:12 w/ attic

No overhead cellulose application

Preserve venting
Vaulted Ceilings: Solution

- Vent Cavity
- 2” Rigid Foam Board
- 16” of Low Density Foam (…or cellulose)
Similarities

Fewer vaulted ceilings

Less volume

More coordination

More realism
Other Notes

Climate

Morale

Subs/Goals
Thanks!

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Citations:

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