

# GAPS BETWEEN TRADES: LESSONS LEARNED IN BUILDING STICK- FRAMED PASSIVE BUILDINGS

Natalie Leonard, P.Eng.

Mike Anderson, BSc, MArch

Passive House E-Design

# Learning Objectives

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- Present the lessons learned from building nine passive houses
- Understand the various impacts on trades between a passive house and a code build house
- Provide details, by trade, on: scope of work, cost and scheduling
- Provide details that may assist in reducing issues and improving quality





# Projects Built to Date

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# General Lessons Learned

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- A local EPS manufacturer for sub slab insulation
- Wall types have been influenced by the siding selection by the client
- Wall types are also selected based on the experience of the builder



# General Lessons Learned (cont)

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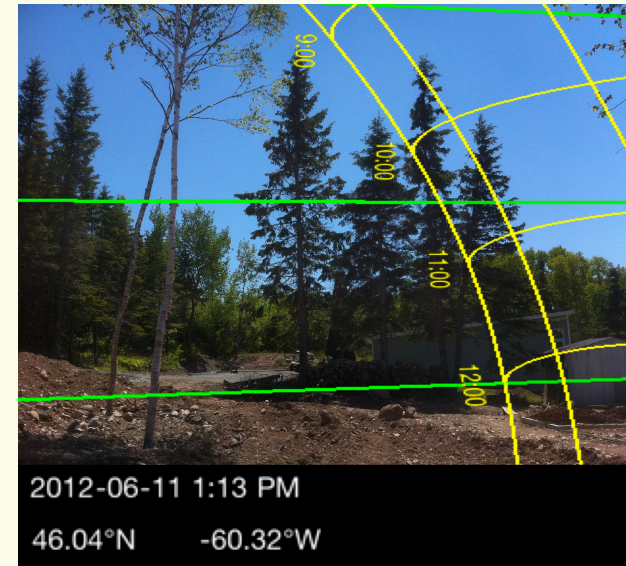
- Sheathing OSB vs Plywood
- Not all tapes are equal!
- In or out of scope?
- Verbally walking the trade through the details.
- Finding trades that are excited about doing something new



# Excavation/Foundation

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- Locating and Orienting House
- Soil Foundation
- Setting up String Lines
- Custom Foam
  - Lots and lots of foam!
- Vapor Barrier and Foam Protection Layers



# Plumbing and Electrical Under-Slab

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- Electrical Conduit
  - Mechanical room in centre of plan
- Plumbing Layout
  - No foundation walls = nothing to measure off
- Ground loop
  - May need to achieve PH





# Framing - General

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- Drawing Literacy
  - Walk through details during pricing and construction
- Air-sealing at the same time
- OSB Ceiling
  - Requires extra framing inspection
- Outdoor rooms
- Attic catwalk



# Framing - Windows

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- Delivery
  - Potential need to “ferry” windows from truck access point to the house
- Installation
  - Very heavy – lift may be required
  - Site glazing almost always
- Air sealing
  - 3 separate air sealing steps



# Framing - Doors

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- Delivery
  - Door air sealing different than windows
- Installation
  - Jamb size
  - Trusses for siding return
  - Multipoint locks
  - More adjustment required
  - Threshold
- Locking
  - Controlling site access



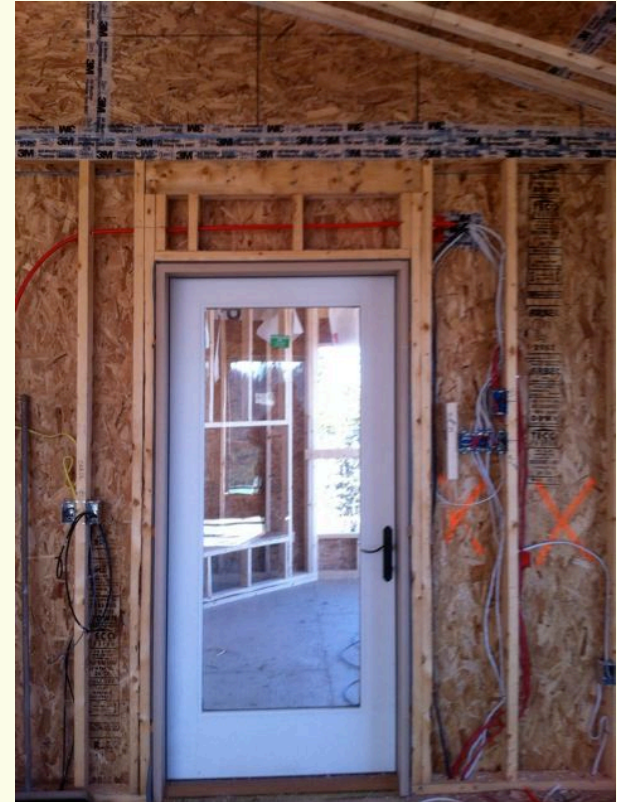
# Services Rough-in

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Limit Penetrations!

Open floor trusses

- Plumbing
- Electrical
- Ventilation
- Heating system



# Insulation: Truss Wall

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- Timing
  - Want to insulate from outside so tricky scheduling
- Quality
  - Dense packing is crucial in the wall
  - Check with thermal camera
- But, No Poly!!!



# Finishes

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- Finished concrete for thermal mass
- Drywall returns
- Security
- Siding
- Landscaping



# Air Sealing

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1. Code built: Sealing typically falls to the insulators
2. PH: Air sealing varies between assembly types
3. Selection of assembly types
4. Hard to price
5. Budget time for teaching and QA
6. Bonus versus Penalty?
7. Scheduling



# Air Sealing: Division of Work

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- Completing it ourselves
  - Better blower door results
  - Harder to schedule
- Sharing the work
  - Critical path items by framers
  - Other items by our staff
  - Who is responsible for poor result?
- Framers
  - When site is too far
  - More willing with hands on training





# Conclusions

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- Use standard materials in different assemblies
- Make sure the trades read the drawings
- Provide detailed scopes of work
- Get early buy in from trades
- Do air sealing by the hour to start
- Provide hands on training and ongoing support: be on-site often
- Don't build in the winter 😊



# Further Information

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Natalie Leonard

[natalie@passivedesign.ca](mailto:natalie@passivedesign.ca)

Mike Anderson

[mike@passivedesign.ca](mailto:mike@passivedesign.ca)

[www.passivedesign.ca](http://www.passivedesign.ca)

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