



Installing Contractor Insulation Boot Camp

Lesson 6: Mapping an Attic & Attic Safety

Lesson Topics



What we will cover:

- Parts of a 1910's colonial house with addition
- Mapping attic layouts
- Working safely in attics

Mapping Attics



What we'll cover:

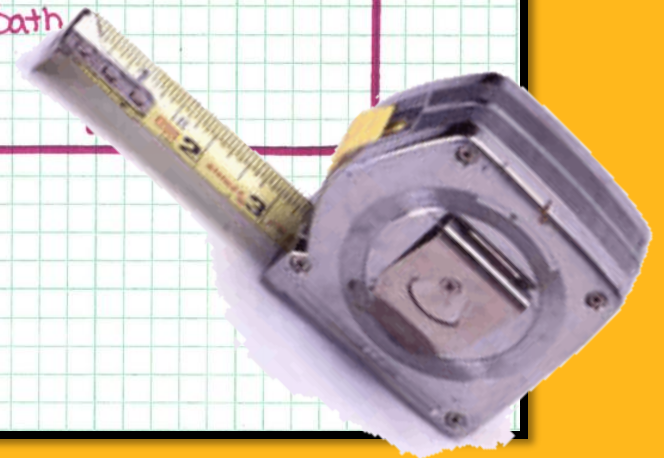
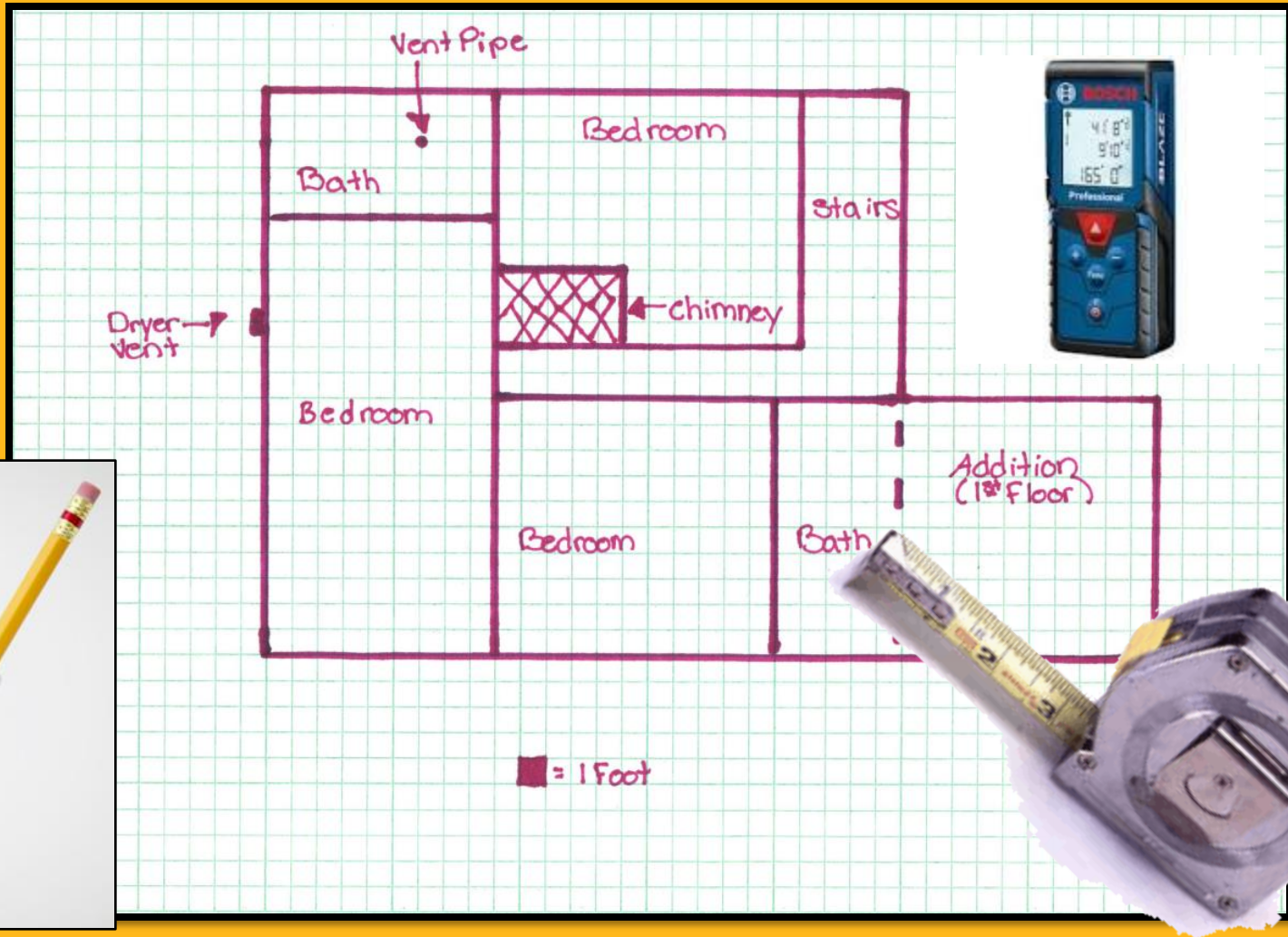
1. What is mapping?
2. Tools for mapping
3. Steps to mapping

What is Mapping?



1. What do we mean by mapping an attic?
2. How would you map an attic?
3. Why would you map an attic?
4. What tools would you need to map an attic?

Tools for Mapping



Parts of a House: House 2

What we'll cover:

- Parts of a 1930's Colonial house with a 1950's addition: framing, joists, and floor plan
- Common air leakage points



Basement and Crawlspcace

1950's Addition

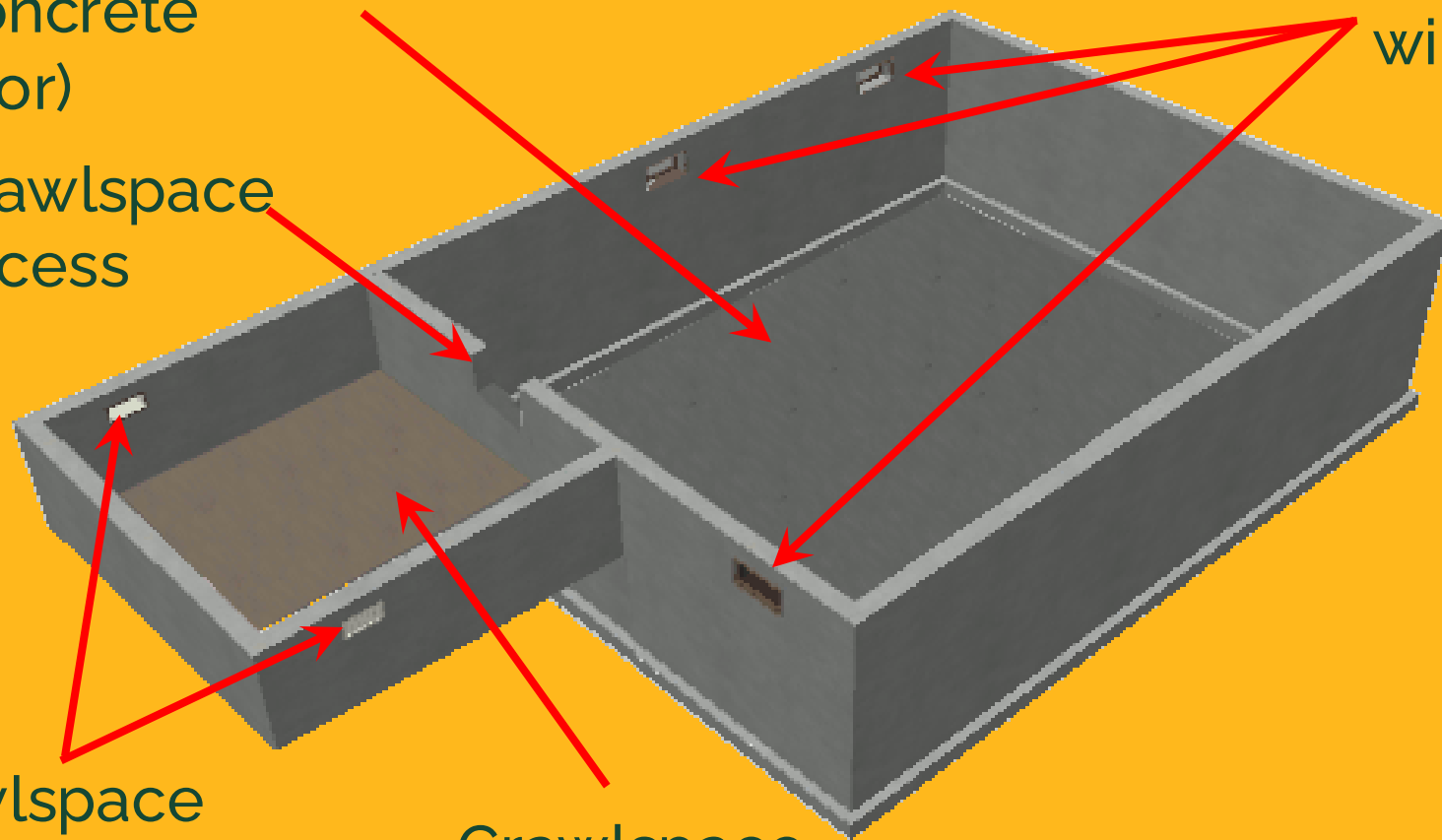


Basement

Full basement
(concrete
floor)

Crawlspace
access

Basement
windows



Crawlspace
vents

Crawlspace
(dirt floor)

Thermal Boundary



Thermal Boundary



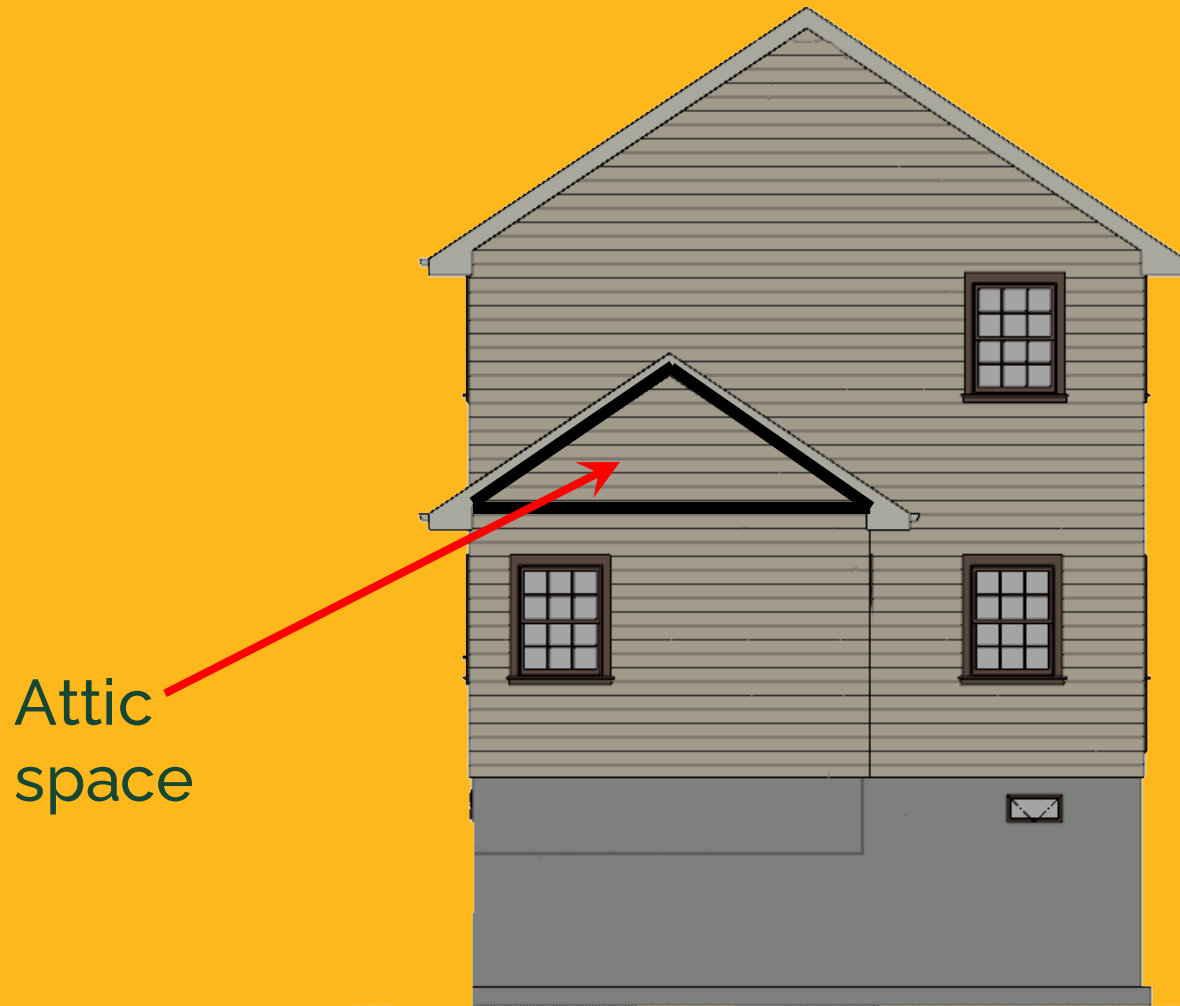
Thermal Boundary



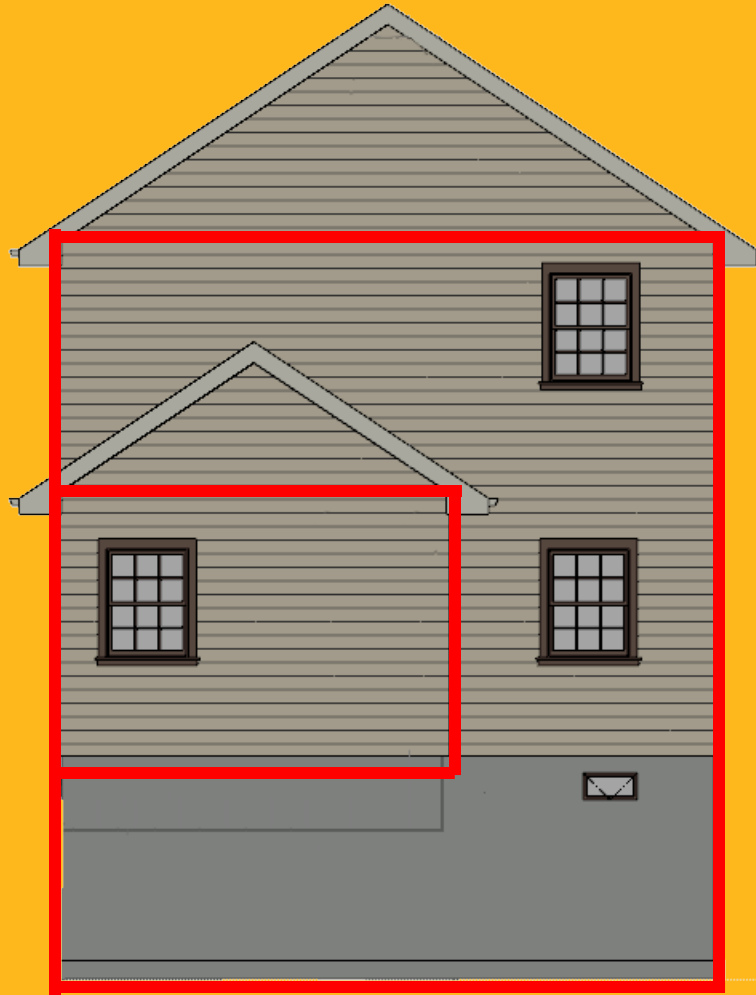
Thermal Boundary



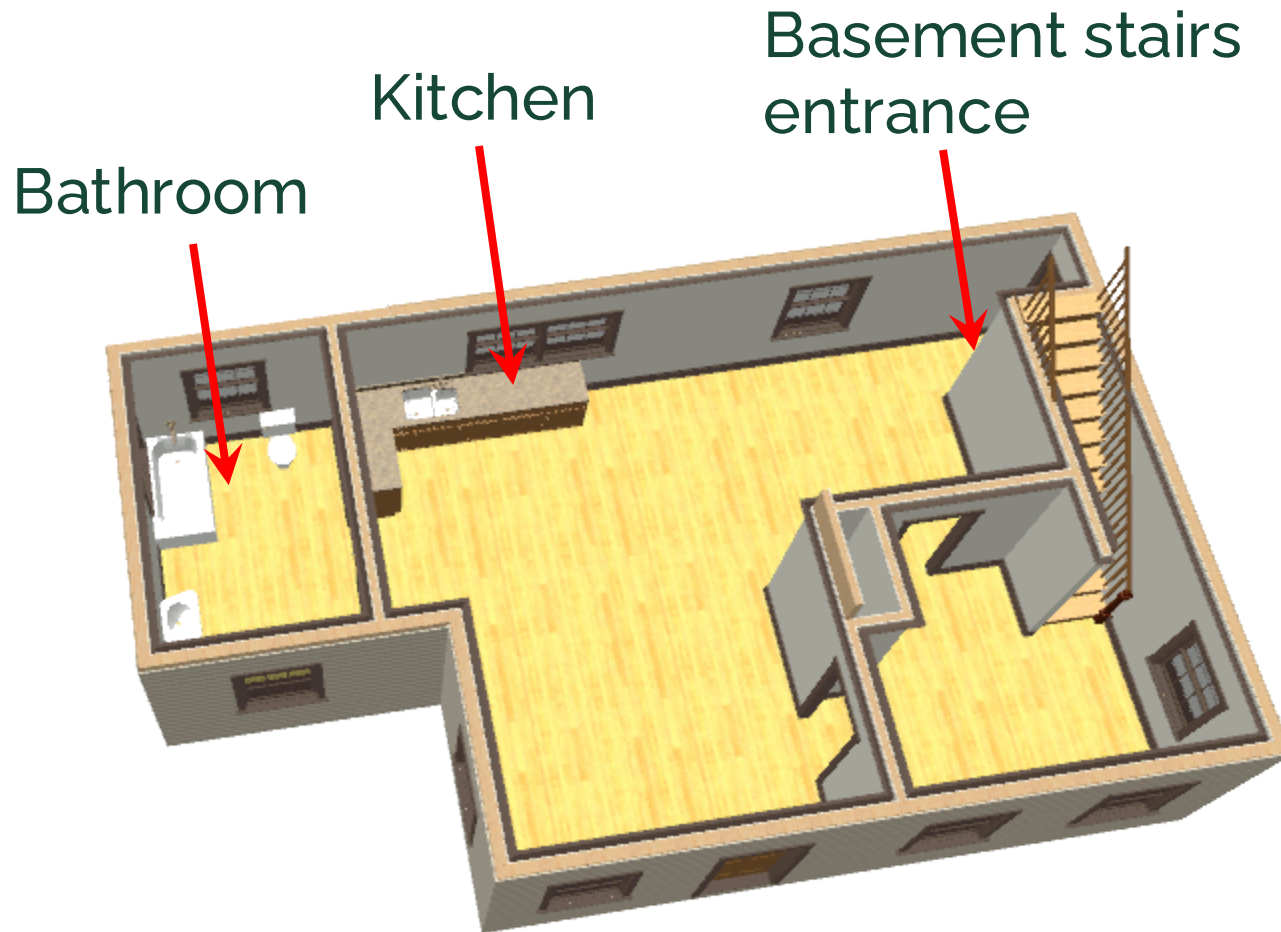
Thermal Boundary



Thermal Boundary



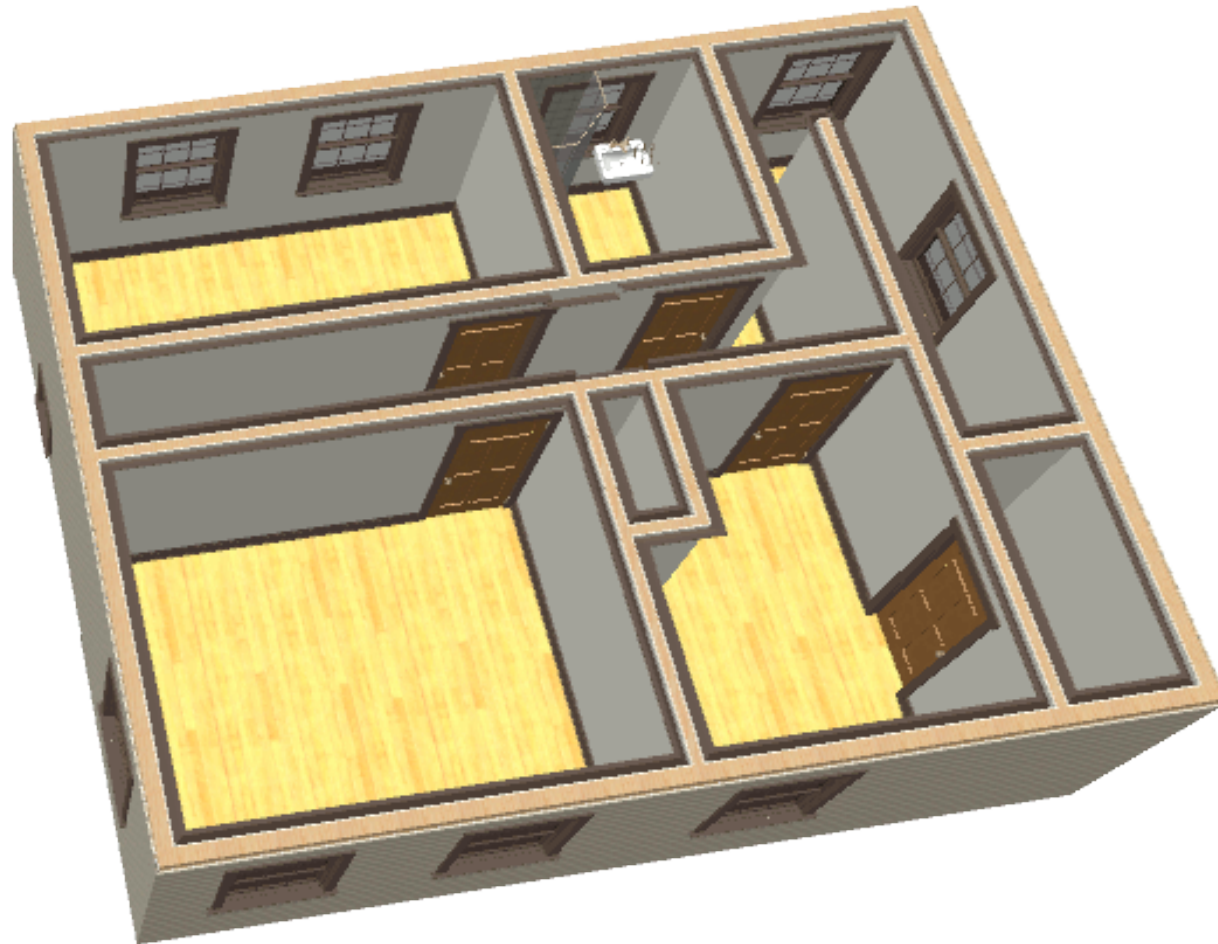
House 2: First Floor



Mapping the Living Space

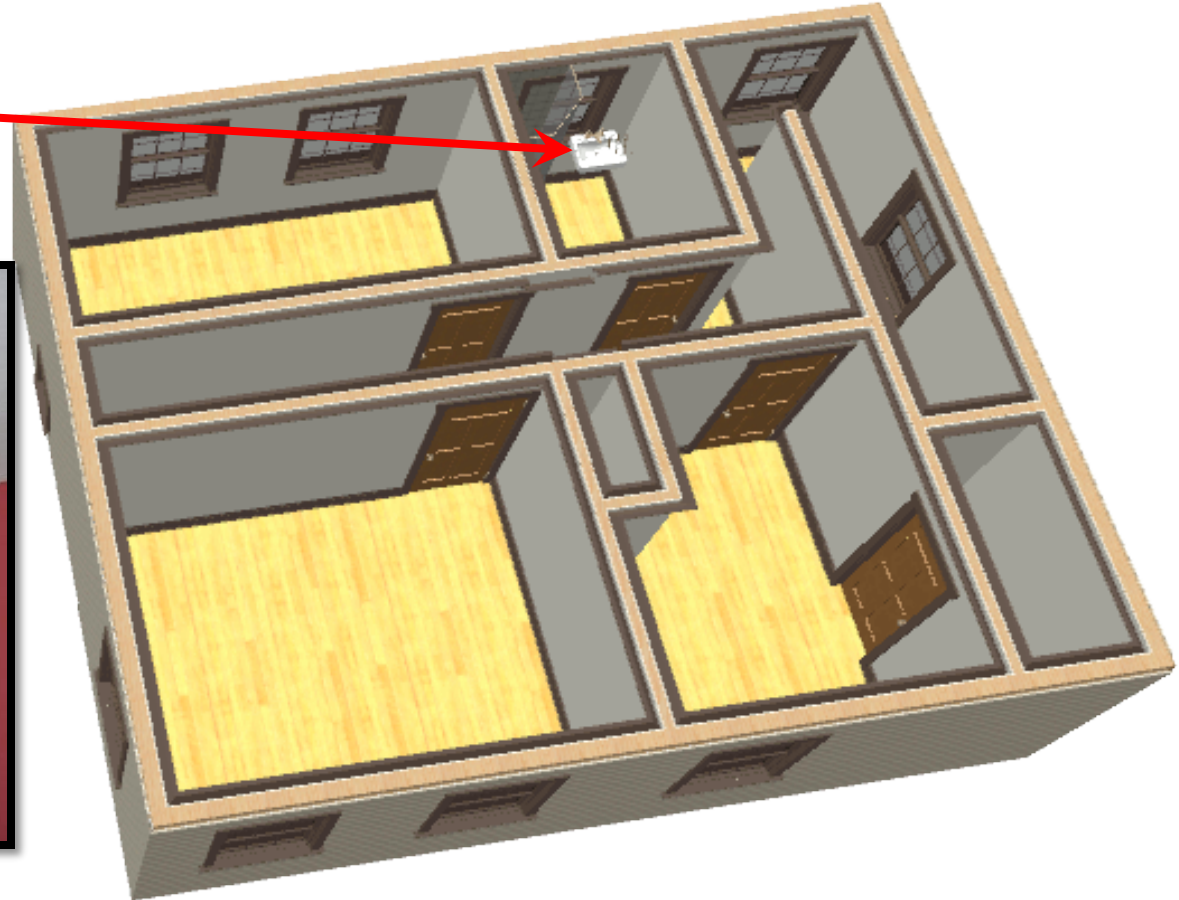


House 2: Second Floor



House 2: Second Floor

Bathroom fan



Living Space



Attic Access



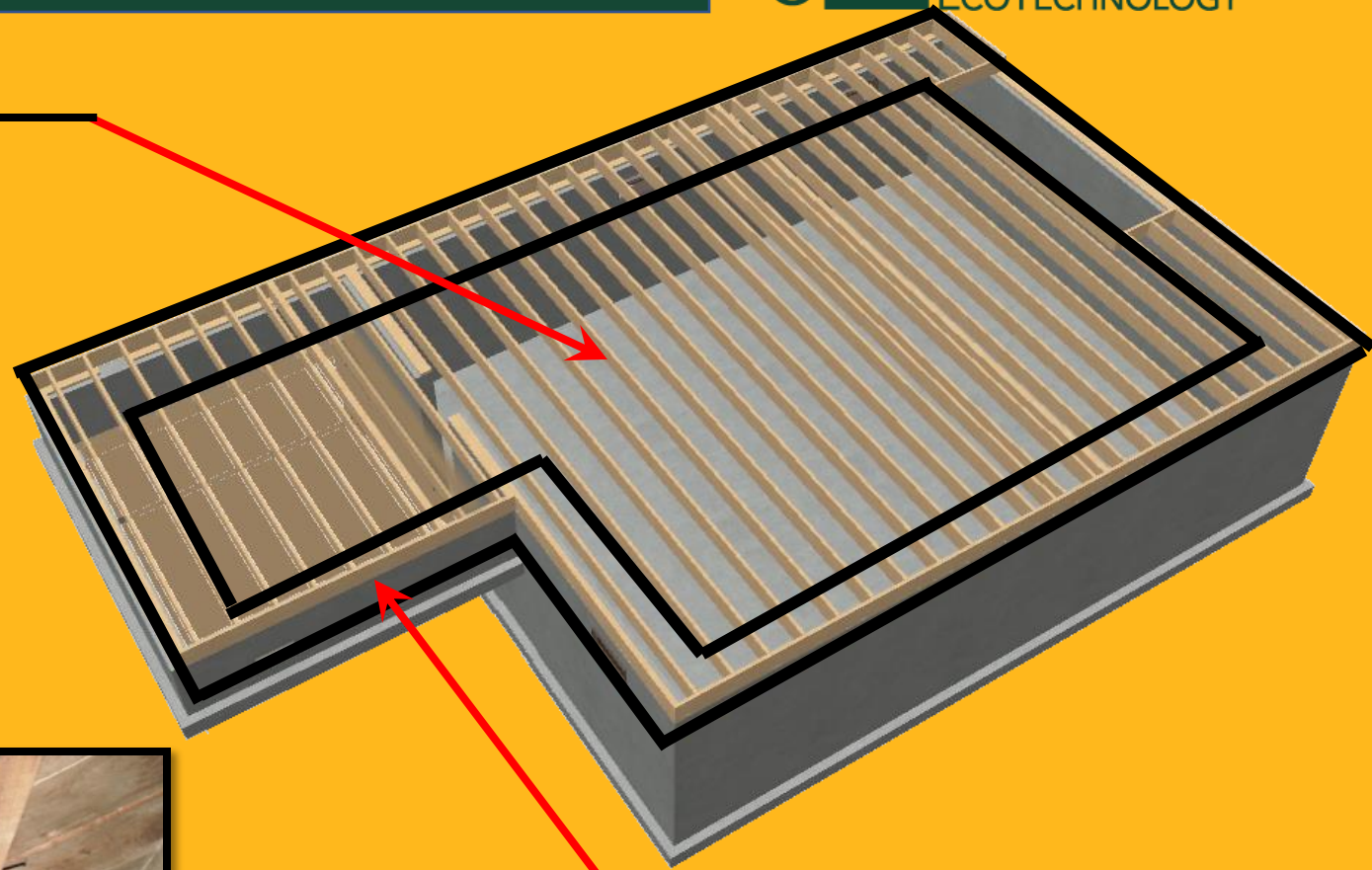
© Center for Ecological Technology

Attic Access (Hidden)



Basement Framing

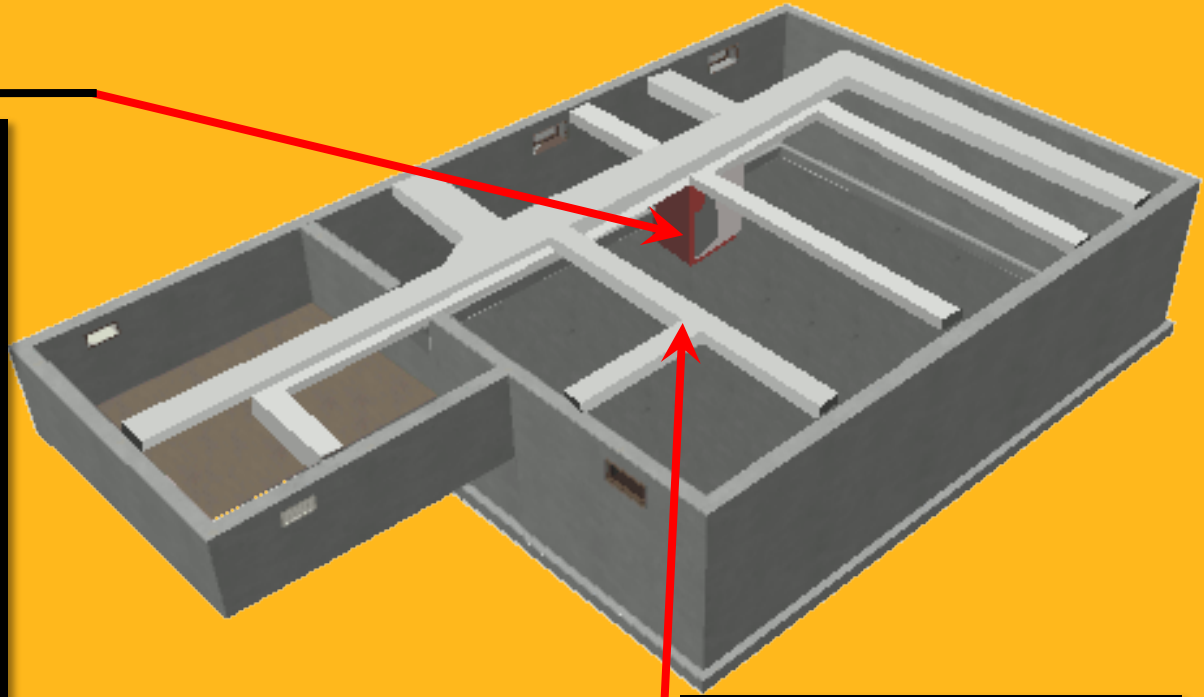
Floor joist



Rim joist

Heating System

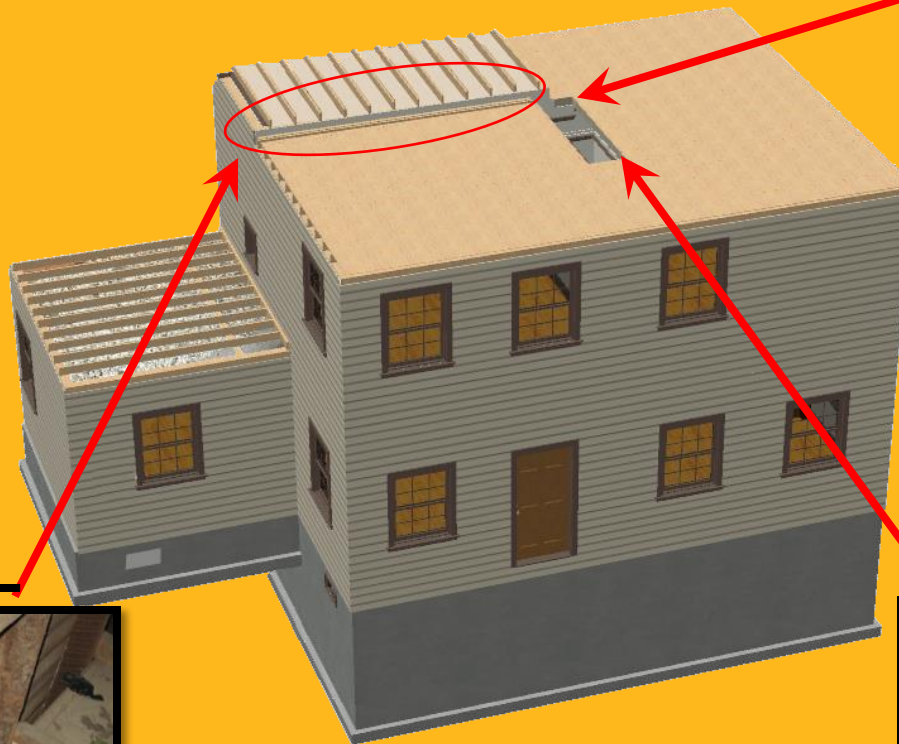
Furnace



Duct work



Attics

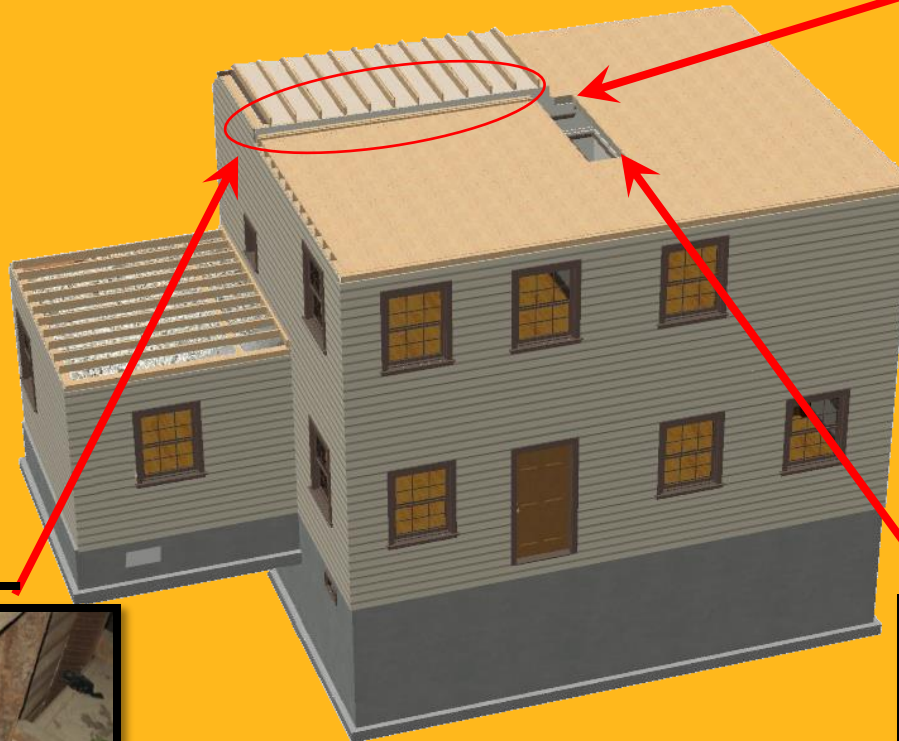


Attic

Attic hatch



Open chase



Level
change



Framing Types



Which are the three types of structural framing?

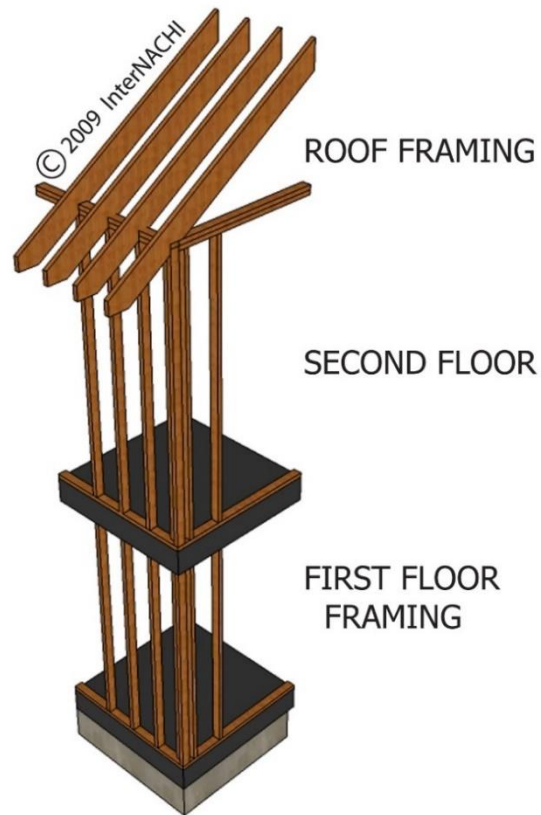
Framing Types

Which are the three types of structural framing?

- Platform
- Balloon
- Post and Beam

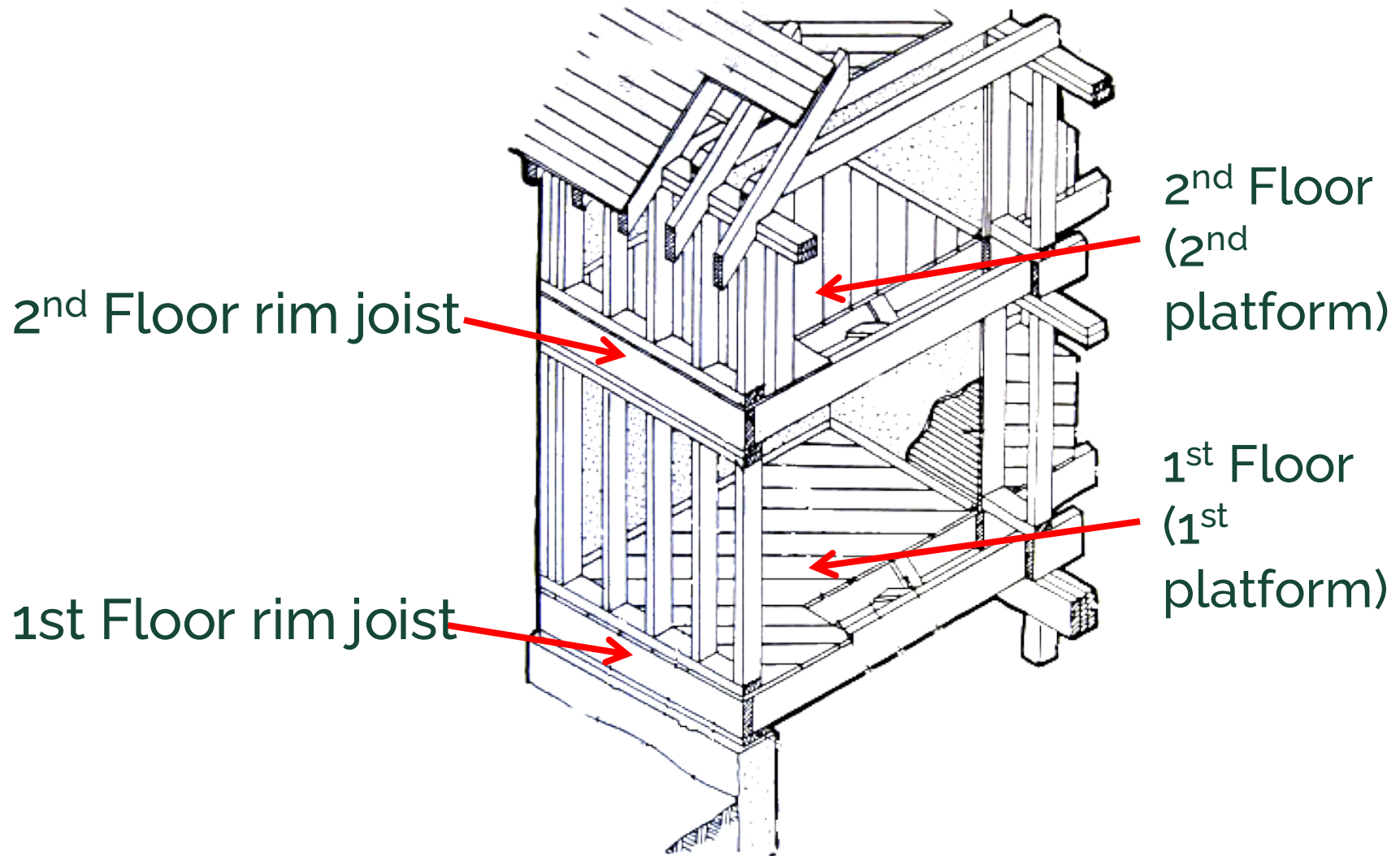
Platform Construction

FRAME TYPE: PLATFORM



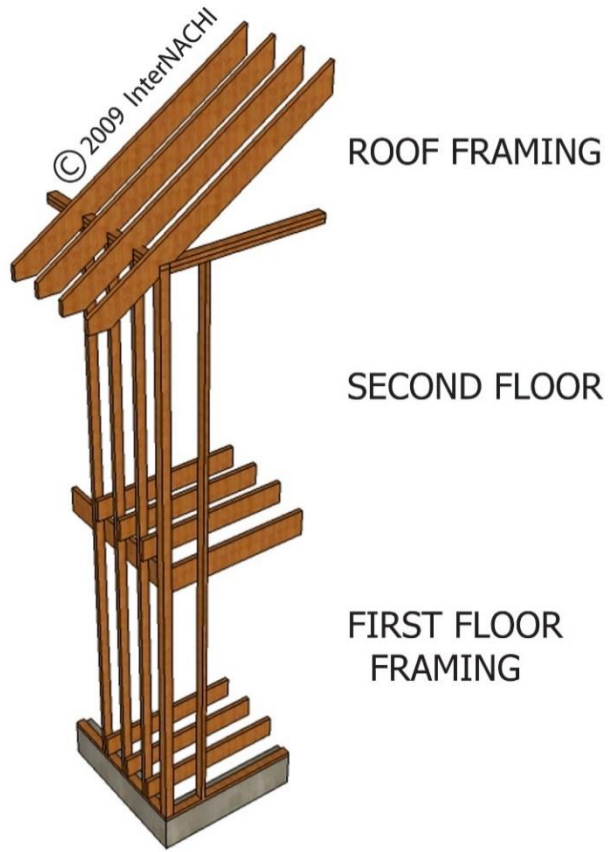
A system of framing a building in which floor joists of each story rest on the top plates of the story below or on the foundation sill for the first story, and the bearing walls and partitions rest on the subfloor of each story. (Usually, one story constitutes a platform.)

Platform Construction



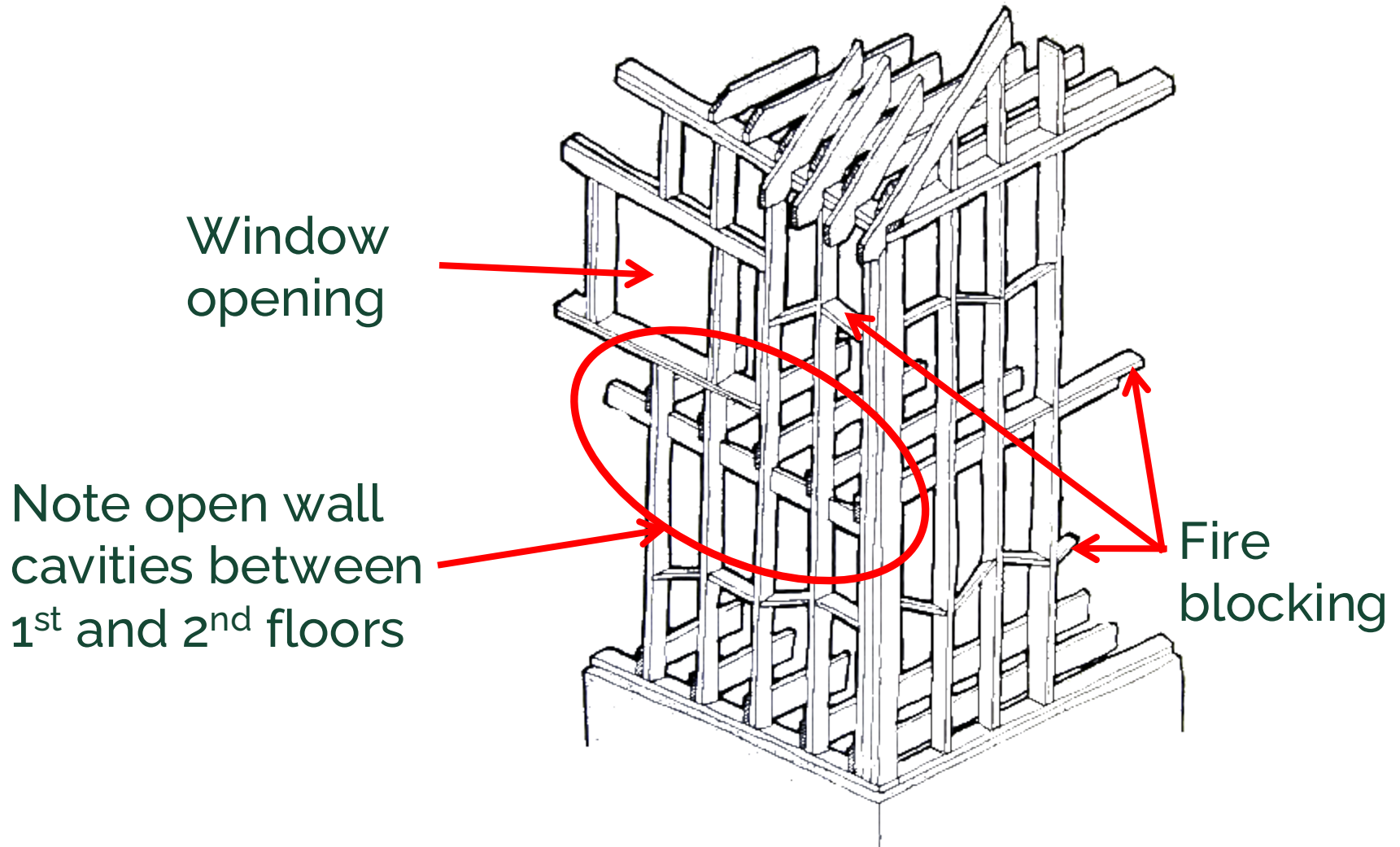
Balloon Frame Construction

FRAME TYPE: BALLOON



Balloon frame construction consists of 2×4 studs spaced every 16-24" just like platform framing does, but unlike platform framing where the studs only extend one story, balloon frame studs were commonly 16-24' long and stretched from the basement to the roof without interruption.

Balloon Frame Construction



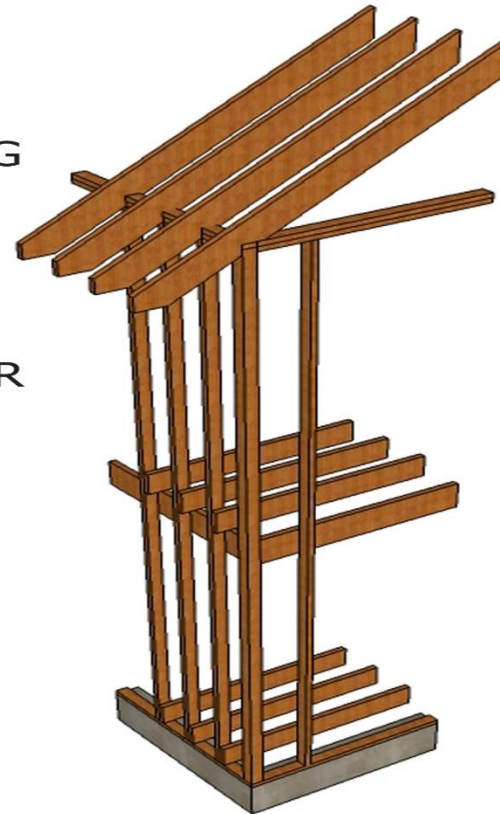
Platform vs Balloon

FRAME TYPES

PLATFORM



BALLOON

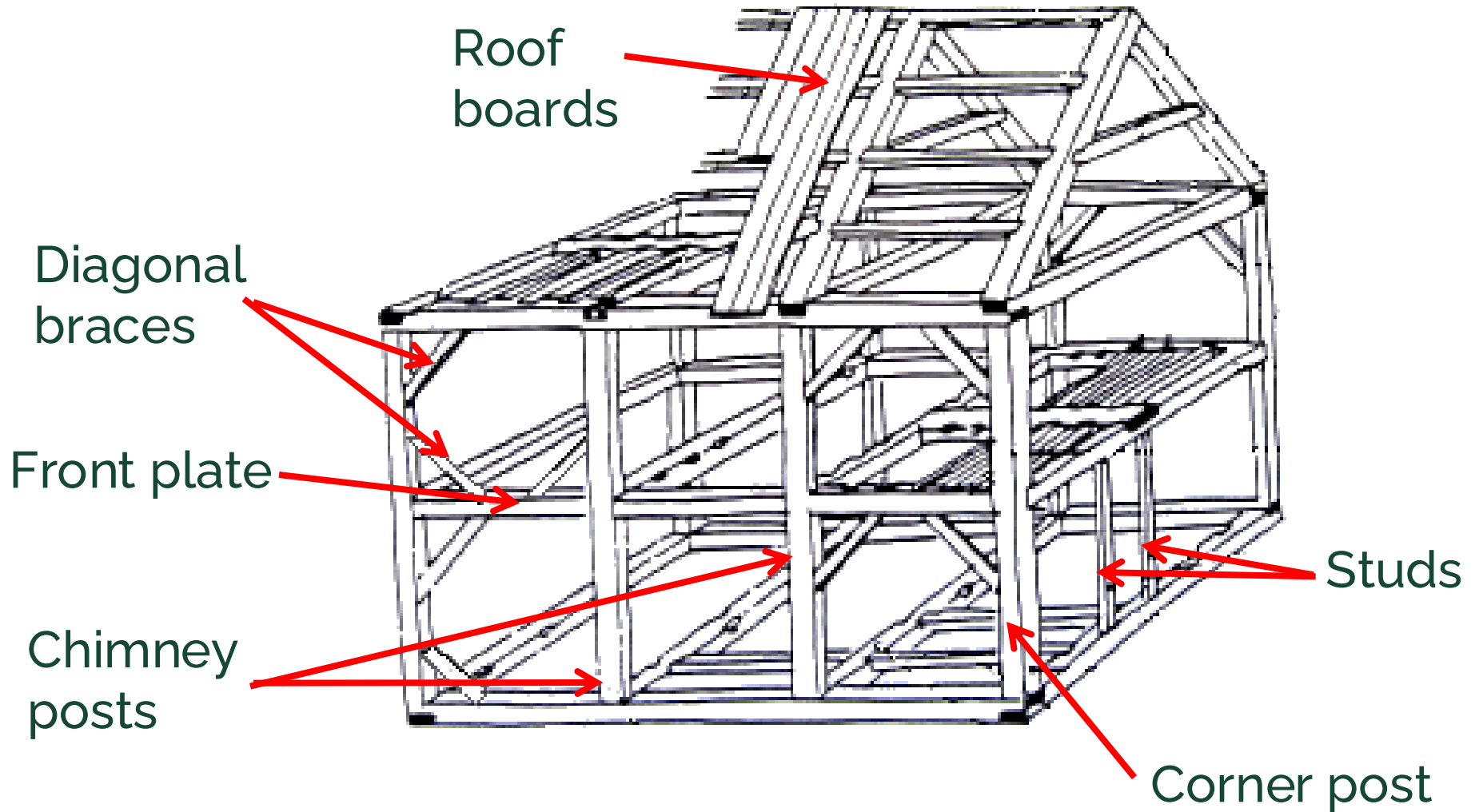


ROOF FRAMING

SECOND FLOOR

FIRST FLOOR
FRAMING

Post and Beam Construction



Post and Beam, Jamestown

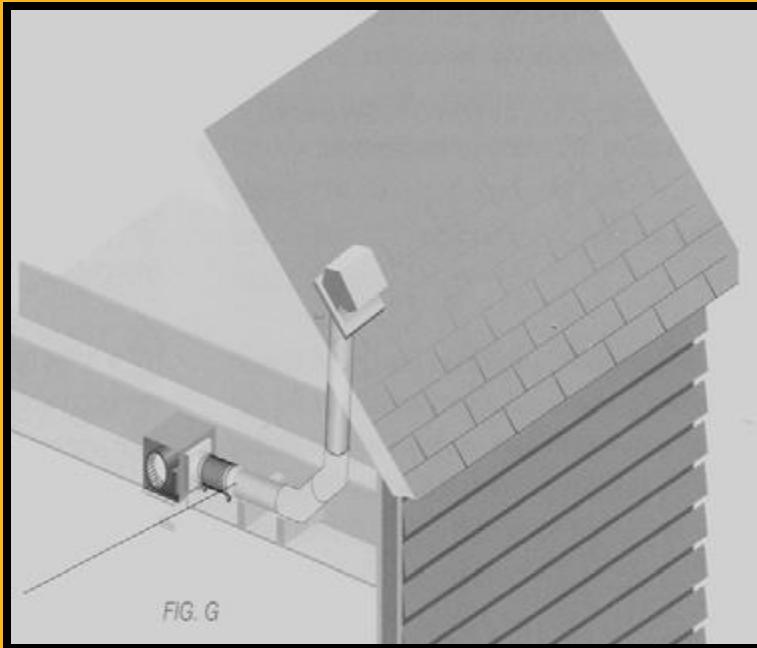


Discussion

- What is the most common type of ventilation device in a home?
- Why should bathrooms be ventilated?
- Why should an exhaust fan not be vented into the attic?

Discussion

Where should bath vents terminate?



Discussion



What is the correct way to install an exhaust fan duct?

1. Duct Type: either galvanized steel or flex duct.
2. Duct Layout: The duct should be supported so that it has as few bends as possible.
3. Bends: If bends are necessary, gradual bends are preferred to 90-degree elbows
4. Duct Insulation: To minimize condensation, insulation should be installed on the duct.

Discussion

How should the ductwork be designed for the bath fan to work most effectively?



Bath fan duct

Exhaust Fan Fails

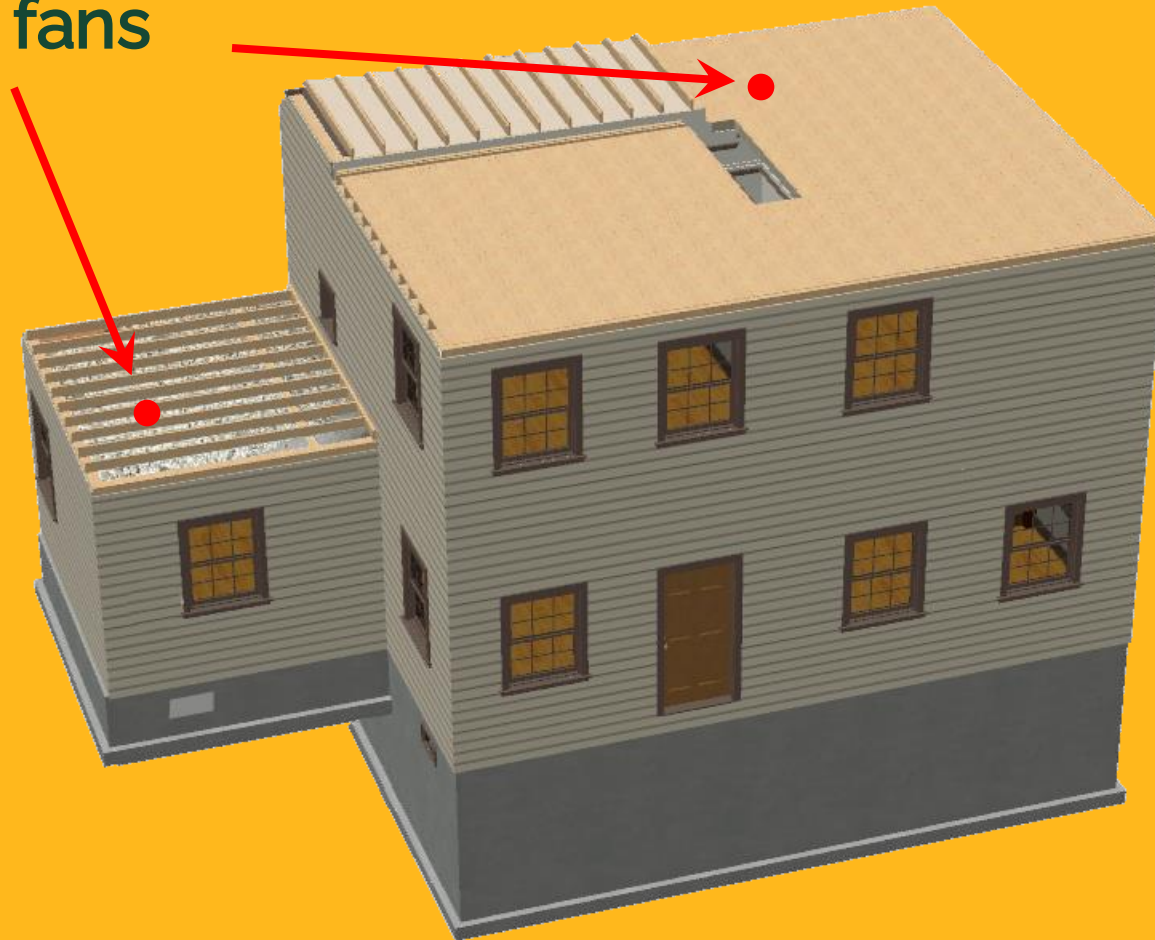


Exhaust Fan Fails



Bath Fan Locations

Bath fans



Roof Termination

- Process similar to installing a roof vent
- Place vent as close to bath fan as possible
- Duct should be insulated



Duct Installation

- Cut the duct to the shortest length possible that will still connect the fan to the vent
- Attach with a zip tie or clamp
- Tape and mastic the duct connections



Example 1



Example 2



Example 3



Example 4



Example 5



Working Safely in Attics

What we'll cover:

- PPE
- Hazards:
 - Temperature
 - Structural
 - Air quality
- Moving in the attic



Personal Protection Equipment

Minimum:

- Safety Glasses
- Dust mask or respirator
- Gloves
- Knee pads
- Protective clothing

Additional equipment:

- Protective suit
- Steel toe boots
- Hard hat/baseball cap



Excessive Heat

- Attics often exceed 130° F
- Limit time spent in high temperature attics
- Never work alone in a hot attic
- Watch for the signs of heat stroke:
 - Nausea
 - Fatigue
 - Headache
 - Absence of sweating
- Stay hydrated



Attic Dangers: Structural



- Check for stability *before* entering the attic
- Step only on ceiling joists
- Do not assume a joist is strong enough to step on – test the strength first
- Look for the signs of compromised framing

Attic Air Quality

- Use judgment when working in potentially hazardous attic areas
- Common attic air pollutants:
 - Mold
 - Dust
 - Animal excrement
 - Asbestos



Moving in the Attic



- Use extra care when moving in cramped areas
- Always look out for nails and other sharp objects – especially on the roof decking
- Bring boards to lay across joists if necessary

Mapping Attics from Below

- Locate areas which need to be addressed prior to installing insulation
- Alert your crew chief if you find stop work items

Bathroom Ventilation

- Needed to remove moisture
- Always terminate at the exterior
- Ductwork design is essential to the device working effectively