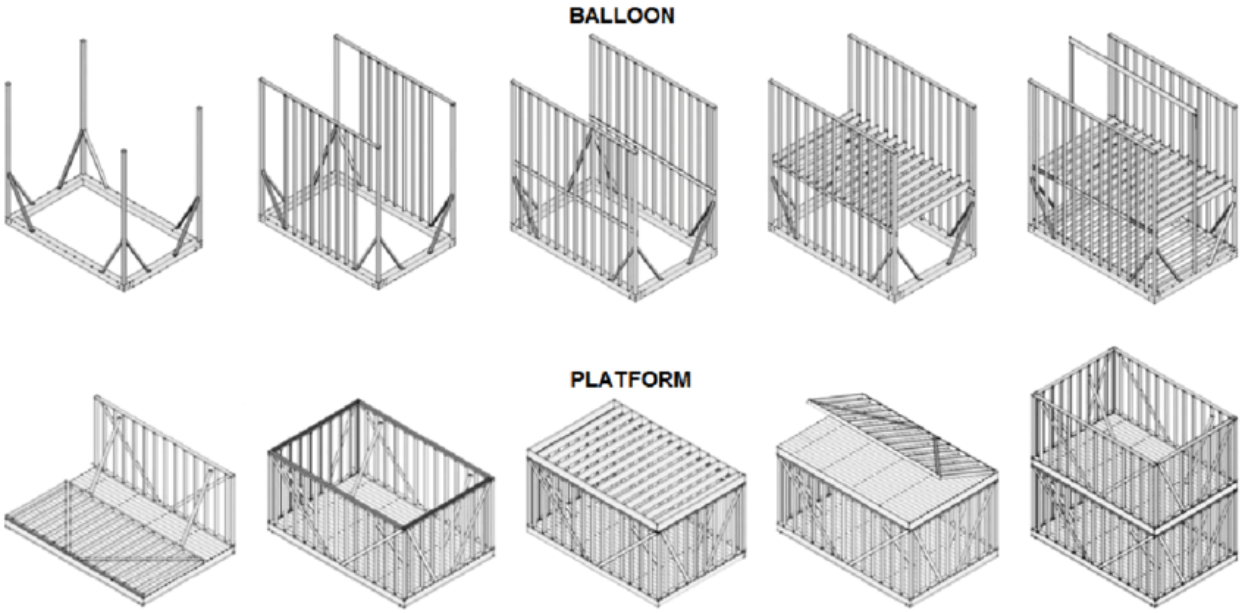
Balloon Framing or Platform Framing?

Balloon framing was invented approx. 1830 and was, at the time considered to be a faster and cheaper method over jointed (mortise and tenon) framing. With the advent of machine-made nails, the costs were reduced by about 40%. This style framing allowed for prefabricated homes as early as 1867. Over time it became apparent that the disadvantage of Balloon framing was the size of the framing members, speed of construction, given such long lengths. Lastly and most important, devastating fires.



Balloon Framing Advantages		Platform Framing Advantages
• You can expect fewer problems once construction is complete. • Drywall cracking is unlikely, which adds to the durability of the building. • Balloon construction is useful in situations where a vaulted ceiling, tall chimney, or two-story open foyer is desired. • You will also have more flexibility in window design. Angled or arched window tops are easier to achieve when using this method. • Large or vaulted windows are also more workable with the balloon technique than platform framing. • The technique creates a structure with a higher resilience due to the longer wall frames that are used. • In turn, it means the building will be better able to withstand high speed or gusty winds.		• It is a simpler construction process compared to balloon construction. • a quicker method of construction. • One structure is constructed and is well supported by a foundation. • Builders then use the first level as a platform to project the next floor. • Rafters and roof joists are erected on the final tier of walls. • Platform framing utilizes less wood. • No fire stopping is necessary because the stud spaces are enclosed by the floor platforms. • walls can be fabricated down on the floor, the safety level for workers is higher • The technique also requires less labor.

Balloon Framing Disadvantages		Platform Framing Disadvantages
• In the event of a fire, the building is likely to be destroyed more quickly. • This is because the structure provides an easy path for fire to travel from one floor to the next. • This means you will have to install fire stops on each level. • Balloon framed buildings don't have insulation between a room and its exterior walls. • The long framing members used in construction pushes up construction costs. • Walls constructed turn out to be very heavy. To raise these walls, more labor, skill, and specialized equipment is required. • It also increases the risk during construction.		• Structural problems may occur after completion of the house. • This is because the joists and headers experience interruption from the sub-floor. • Vertical shrinkage is likely when the wood dries. This may destabilize siding materials, resulting in frequent maintenance.

Framing Facts

- A building's approximate age can be determined by its 2x4s.
- The first studs were a full 2" by 4", but size wasn't precise. These early studs weren't surfaced either.
- Surfacing became prevalent in the 1920's with size changing to 1-5/8" x 3-5/8".
- Stud size changed again after WWII to the current 1-1/2"x3-1/2". Old time carpenters joke the 2×4 will be reduced to 1" by 3" within the next few decades.

- Studs are precut to lengths for standard 8', 9' or 10' ceilings.
- For an 8 ft ceiling, stud length is 92-5/8" (7'-10 5/8").
- When adding a bottom plate and double top plate to the wall framing (3"x1.5"=4.5"), total framed wall height becomes 8' 1-1/8".
- This allows for 3/4" floor finish and 1/2" drywall ceiling finish for close to an 8 ft ceiling height. A 9 ft precut stud is actually 104-5/8".

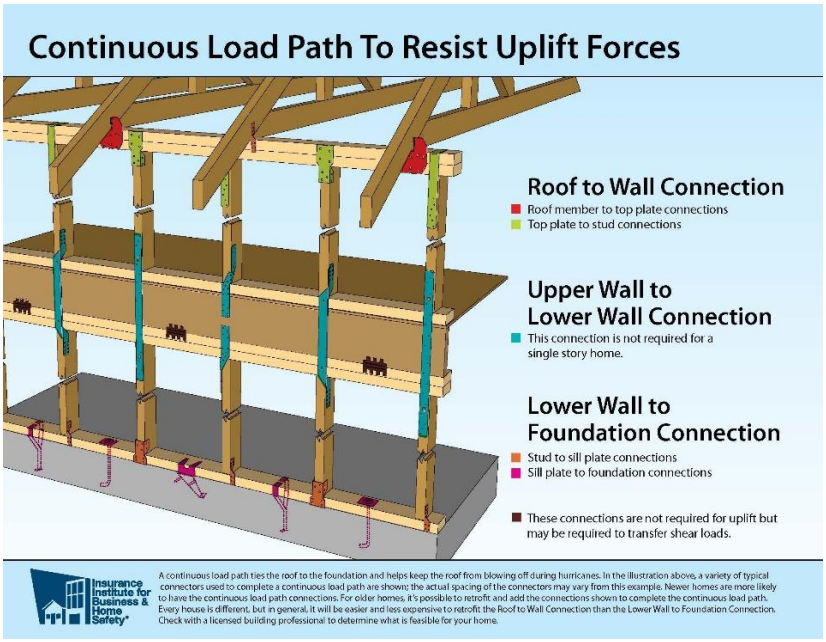
The overlooked Sill Plate

So, you have a foundation, of some type, and you have a house that sits on it. Now factor in the possibility of high winds, and some really high winds, or earthquake, or settling, or any other type of stressor. This is the space that a sill plate lives in. it is the unsung hero or the framing world. The one point in which, if you don't get it right, will cause disaster. Let's look at some diagrams.

Simple sill (mud) plate

Simple sill seal (capillary break)

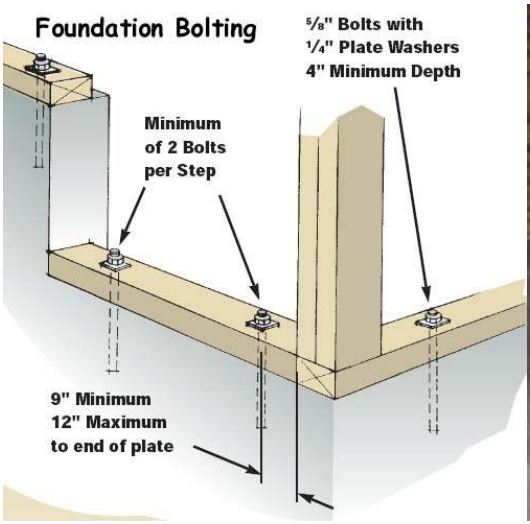
High wind framing reinforces each connection layer in the Framing & to foundation

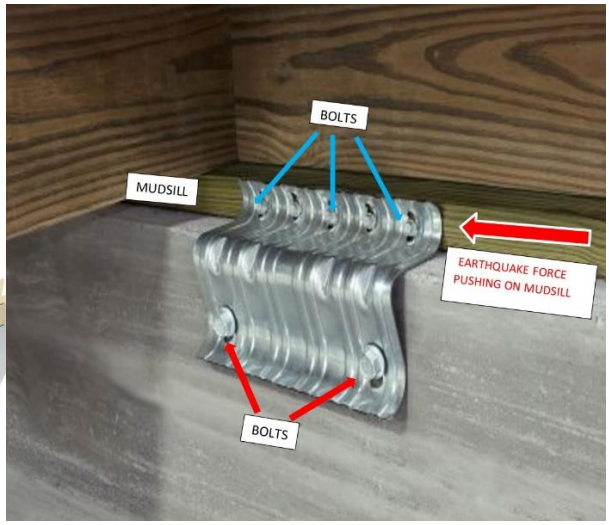


Load Path, Some Simple Thoughts

In all cases, the stresses played against the homes framing is transmitted through each member and to a foundation, through the sill plate. While the framing may be designed with shear walls and additional connectors, if the bolting pattern and style is not designed well, the house slips from its foundation.

As the load path shifts during earthquakes and hurricanes, the framing has to allow for shifting load paths. Simple bolting, on left, may not be adequate. Retrofitting "clips" will help in anchoring the sill plate to the foundation. (on right)





Where do you look for rotted sill plates? They can be difficult to spot at times from the outside, but if the basement is unfinished and the joist spaces are not insulated, you can spot the rot.

Sources:

https://www.doityourself.com/stry/platform-framing-vs-balloon-framing
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