

Wood

History of the Lumber

Wood is perhaps one of the oldest building materials. It is used extensively in the United States and Canada.

Most wood used in construction comes from the Pacific Northwest; current practices call for replanting of harvested forests.

Material Properties and Uses

Most residential construction is accomplished with wood framing.

Commercial structures are typically steel (stud) and concrete construction though can use wood if certain codes (sprinklers) are met.

Hardwood

Wood from a tree that loses its leaves annually; called deciduous.

Examples: Oak, maple, cherry, and walnut.

Softwood

Wood from a coniferous (cone bearing) tree that retains its needles all year, often referred to as evergreen.

Examples: Pine, spruce, and fir.

Rough Lumber

Wood that has been sawed, edged and trimmed but not dressed.

Example: A 2x4 that is truly 2"x4".

Dressed Lumber

Lumber that has been surfaced on all four sides.

Example: A 2x4 that is actually $1\frac{1}{2}$ " x $3\frac{1}{2}$ ".

Lumber Sizes

Named	Actual
2x4	1 1/2" x 3 1/2"
2x6	1 1/2" x 5 1/2"
2x8	1 1/2" x 7 1/4"
2x10	1 1/2" x 9 1/4"
2x12	1 1/2" x 11 1/4"

Wall Components

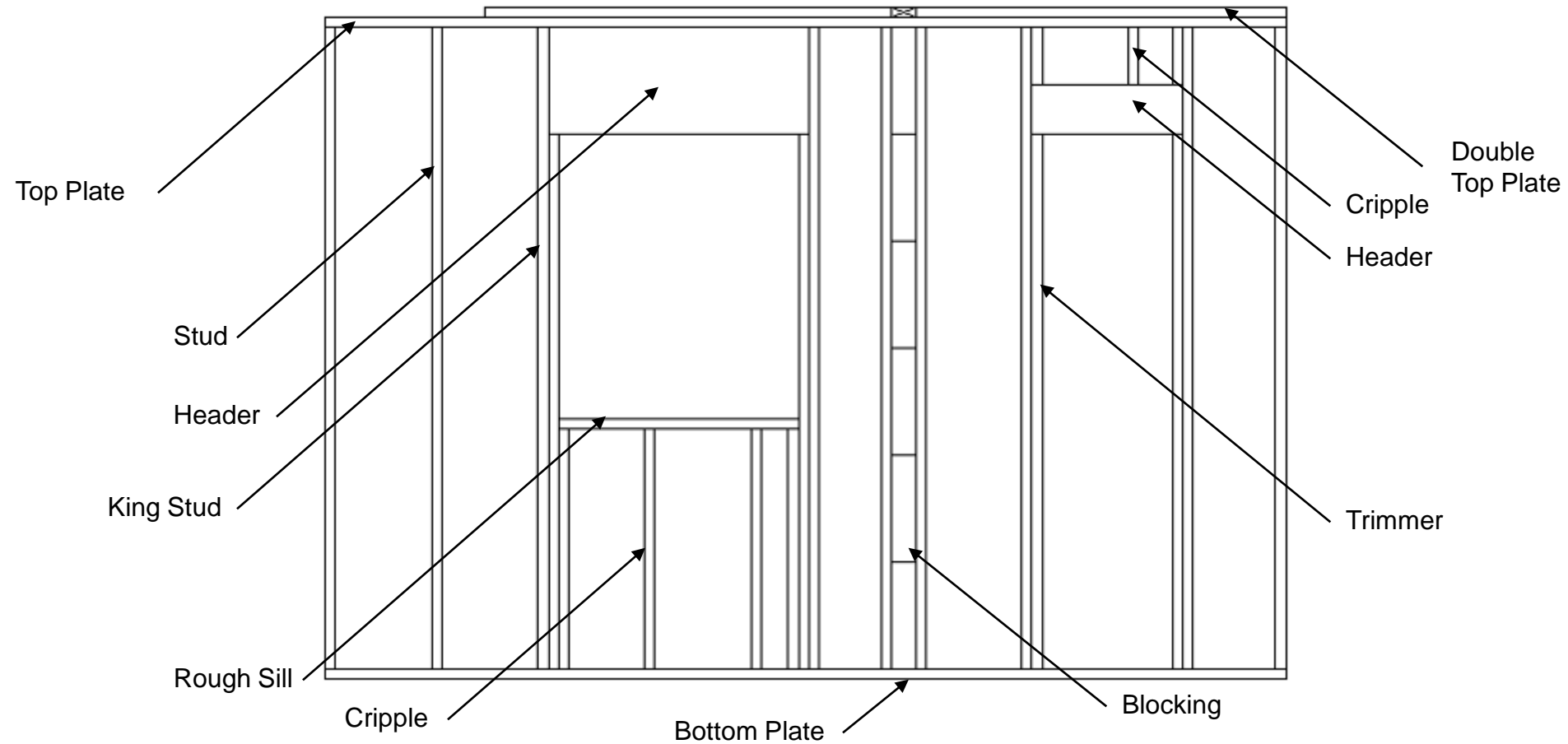


Illustration Courtesy of Eric Dunn

Lumber

Most interior and exterior walls are framed with 2x4 studs.

Some exterior walls use 2x6 studs to allow for more insulation.

2x6 walls are used for waste plumbing walls where the added thickness of the wood allows for 1 ½" or 2" waste pipes.

Floor Framing

Girders

Joists

Decking

Sills

Joist Headers

Bridging – every 8' of span

Usually joists are 16" on center (OC) sometimes 12", 20", 24", 30" & 36"

Girder

A large beam of wood, steel or concrete typically used in floor framing to support the ends of joists.



Photograph Courtesy of Eric Dunn

Joist

Parallel framing members that support a floor system. The subflooring is attached to the tops of these members.

Decking

Framing material that attaches to the top of the floor joists to form a surface (subfloor) on which finished flooring materials can be attached.

Typically these are 4'x8' sheets of OSB or plywood.



Photograph Courtesy of Eric Dunn

Sheathing

Framing material that attaches to the exterior wall framing for strength and as a medium for attaching the finished siding material (vinyl siding/bricks/etc.).

The term is also used for the medium that attaches to the top of rafters or trusses to which shingles will eventually be applied.

Typically these are 4'x8' sheets of OSB or plywood.

Rough Sill

A horizontal framing member that lies directly underneath a window or opening that distributes the weight of the window to the wall framing members.

Header

A built up framing member that spans an opening (door or window) to transfer weight from above to wall framing around the door or window.

Headers

Headers distribute weight around opening

Two pieces of lumber with a piece of 1/2" plywood/OSB sandwiched in between

Headers sit on top of the trimmers

If the opening is greater than 6', two trimmers should be used

Not required on non-load bearing walls (check specs)

Bridging

Framing members between floor joists that help distribute weight from the floor loads to the next parallel joist and help prevent the joists from twisting.

Bridging can be metal, solid wood or cross wood bracing.

Engineered Lumber

Lumber that is manufactured using pieces of wood glued and pressed together.

Typically these engineered pieces are larger and stronger than natural materials would be allowing for longer spans and greater weight support.

Examples: Glulam, LVL, I-Joist

Roof Framing

Most roof framing is accomplished with prefabricated trusses

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Sheathing is calculated the same as decking – remember the slope of the roof.

Some portions of roof might need to be stick framed – use appropriate size lumber – usually 2x6 minimum.

If stick frame roof, be sure to include ceiling joists and collar ties, soffits and fascia.

Rafter

A framing member used in parallel with other rafters to form a sloped surface for a roof.

Rafters are cut on site.

Truss

A manufactured building component used in roof framing that is built of several smaller pieces, typically in a triangular configuration for strength.

Trusses allow a reduction in labor on site.

Wood Trim

Trim comes in numerous shapes and sizes and includes

- Baseboard

- Toe mold

- Window casing

- Door casing

Time and money can be saved by buying primed trim if the trim is to be painted.

Baseboard

Trim material that follows the wall where the floor and wall meet. Different profiles are used based on the style of the building.

This material can be wood, plastic or composite.

Casing

Finish trim material that encircles a window or door opening. Different profiles are used based on the style of the building.

This can be wood, plastic or composite.

Board Foot

Some lumber is purchased, priced and sold by the thousand feet-board measure:
mfbm

One board foot is equal to a piece of wood 1" thick and 1' wide by 1' long.

Use nominal size (size before dressed).

Board Foot Calculations

$$N = P \times \frac{T \times W}{12} \times L$$

N= number of feet (board measure)

P= number of pieces of lumber

T= thickness of lumber in inches

W= width of lumber in inches

L= length of pieces in feet

12= inches in a foot (constant, does not change)

Additional Information

National Hardwood Association

The Engineered Wood Association

Engineered Wood Products Association

U.S. Green Building Council

Ohio 2007 Residential Building Codes

American Chemistry Council