

Features of Light Framing

Canadian Wood Council

Light framing is a method of construction that is functional and versatile. Light frame construction may be thought of as roof, floor and wall planes that serve the following functions:

- **Structure:** walls can be designed to be load bearing so that the wall transmits vertical loads to the foundation. They can also be designed to act as shearwalls to resist lateral forces from wind and seismic loads both perpendicular to and parallel to the direction of the wall. Roofs and floors are designed to accept building design loads and in addition can be designed to provide diaphragm action thereby providing resistance to racking. _
- **Strength:** the good structural performance of light framing is due to two primary factors: load sharing and composite action. Load sharing means that alternate paths of load transfer become available when the assembly is stressed. Composite action is the contribution that sheathing and fasteners make to the strength of lumber members. As a result, light framing has reserve strength and stiffness. _
- **Envelope:** the sheathing materials used to provide rigidity also serve as the building envelope to which exterior finishes are attached. _
- **Insulation and finishes:** the space between the framing is used for insulation, and the framing is used for affixing vapor barrier and interior finish. __

Prefabrication

Frame construction lends itself to prefabrication. Modules can easily be prefabricated using indoor working conditions and perhaps automated nailing systems to speed assembly. Alternately, prefabrication can be performed on site with panel units being raised into place manually or, where necessary, hoisted into place by crane.

Feasible Sizes

Frame construction can be applied to larger buildings using small building techniques. Larger members are used to ensure the larger forces developed are adequately transferred. In this way, light frame construction can be applied to many commercial applications. __The use of light frame trusses for roof and floors permits spans greater than 60'. Long spans can be achieved by using prefabricated I'joists, laminated veneer lumber (LVL), parallel strand lumber (PSL) or glulam. __Stud walls, using readily available dimension lumber and platform construction, can easily be made up to 16'high, and, by special order, up to 23' high. Substituting wood I'joists for dimension lumber studs increases further that wall heights possible, or adds strength where high wind loading is a design parameter. In addition, frame construction can be combined with post and beam construction where there is a special need for clear areas.

Availability of Materials

Light framing employs materials that are readily available. For materials which must be custom manufactured, such as light frame trusses, the time required for shop drawing approval and manufacture, about three weeks, can be significantly less than for other materials such as fabricated steel.

Site Adjustment

Wood construction in general and light frame construction in particular is easy to adjust to account for changes or errors, and to accommodate future additions. ___The materials, fasteners, and skills required for light framing construction are readily available in all areas of North America, and wood is easy to cut, splice, and fasten.

Cost

While definitive information is not presented due to regional differences for material and labor, light frame construction has been shown to be economical in comparison to alternate building methods. This economy is the principle reason for the predominant use of wood in residential construction in North America, and also a good part of the reason for selecting wood as the structural material for many commercial buildings. Even when sprinklers or requirements for firewalls are specified, wood construction remains cost competitive with other types of construction while still providing a high degree of fire safety.