

Benchmark	Wall Type					
	Solid Wood	Wood Frame	Steel Frame	SIP	ICF	Concrete/CMU
Insulation	Integrated insulation and mass, allowing solar gain on exterior. Effective for heat, sound, and electrical insulation. Continuous full length of log wall.	Cavity insulation provides approx. 80% of wall	Cavity insulation provides approx. 80% of wall	Foam core with framing around openings, splines at seams; insulation provides approx. 91% of roof panels and 86% of walls	Continuous foam insulation forms contain concrete. No gain from thermal mass gain on either interior or exterior	Continuous foam insulation on exterior limits heat loss while exposure to interior can temper indoor climate.
Insulation Stability	As logs acclimate to the building climate, R-value increases	Wind-washing occurs when unconditioned air moves within air-permeable cavity insulations, such as fiberglass, cellulose, and board-stock insulations		Thermal drift (aging) is the phenomenon by which R-value decreases as foam plastic insulation material ages		Mass wall systems are monolithic, and seams can be controlled
Drainage Plane	Profile design sheds moisture when properly maintained with an exterior finish	Siding design sheds cascading water; interior drainage plane / rainscreen requires weep holes for moisture drainage and ventilation appropriate for drying air flow.			Stucco or similar coatings over foam provide rainscreen.	
Indoor Air Quality (IAQ)	Wood fragrance, moderation of relative humidity	With proper vapor and air barrier construction, wall assemblies will not affect IAQ		Early release of gas propellants used to create it; may have unpleasant lingering odors		Moderation of relative humidity

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Fire Rating	3/4" solid wood meets thermal barrier	Type V construction per code.		Thermal barrier is required between foam plastic and interior spaces.		None
Renewable	100% wood, logs can be reclaimed & remanufactured	20% framing, sheathing	sheathing	sheathing	none	Produced from a finite supply of raw materials, intense heat to produce increases embodied energy, but less fossil fuel is now being used. The cement mixture uses a broad range of manufacturing by-products that diverts it from landfills.
Embodied Energy	A natural, renewable resource, least of all structural building materials.	Embodied energy varies with insulation and siding products used.		Embodied energy varies with siding applications and thickness of foam used.		
Waste Management	All byproducts are usable; no land fill	Wood can be reused, remanufactured, or used for fuel.	Steel framing can be recycled.	Extremely limited resources for recycling foam.		
Carbon Storage	100% in use	Wood framing, sheathing, siding	Wood sheathing, siding	Wood skins/sheathing	None	None
Products of Petroleum	Gaskets	Vinyl siding, air/vapor barrier, drainage plane, gaskets		Vinyl siding	Insulation	none