C.

House design/built by Terra Firma Builders with rammed earth walls, passive solar design, energy efficiency, radiant floor heating, heat recovery ventilator, attention to indoor air quality, built for durability and low maintenance.

Location
In Ganges, for walking access to services and reduced automobile use. Although adjacent to the busiest road on SSI, the acoustical attenuation of the SIREWALLs leaves the interior an acoustical sanctuary.

Passive solar design
The soffit outside the full height south-facing windows is tilted upwards to the angle of the winter solstice sun at noon, thereby optimizing the solar gain in winter. The overhang length of the soffit (3' 3") provides a dry outside walkway and is calculated to have the noon sun on summer solstice create a shadow on the interior window sill, keeping the sun out when heat is not needed (summer). The outside seating area is a solar pocket. The house has a temperature flywheel and humidity flywheel unavailable in lightweight construction. The result is radiant thermal comfort and humidity stability. Mold is a near impossibility in this environment.

SIREWALL rammed earth walls
The mass walls, combined with running the electrical lines vertically instead of horizontally in the walls, results in very low EMFs (electro-magnetic fields). This is the only SIREWALL house where no colourant (iron oxides) have been added to the walls. The wall colour is the colour of SSI soils. SIREWALLs are healthy, durable, energy efficient, environmentally appropriate, fireproof, acoustically attenuated, and beautiful.

Thermal envelope measures
Walls - R33, ceilings - R56, slab - R20, glazing - R4.5 and glass blocks – R2.

Geomagnetic Coupling
This is the first SIREWALL house where we eliminated steel in the slab to enable geomagnetic coupling (this is now a standard feature). Human beings do have the biological equipment to detect the constantly shifting geomagnetic forces (Schuman's resonance) and many people feel better in spaces that feel like outside in that regard. If you spend a little time in one place on the ground floor, you may notice something.

Live Cycle Embodied Energy
A typical house with a 50 year lifespan, when looked at from a lifecycle embodied energy point of view, uses 6.1% of total energy in construction, 93.7% of total energy in occupation and 0.2% in deconstruction. Therefore, we need to make houses that last longer and consume less energy in the occupation phase. This house does both those things. Much of the attention to embodied energy is mistakenly placed only on the initial embodied energy during the construction phase.

Natural Materials / Healthy Indoor Environment
We are a slowly evolving biological species. We are not insects. Therefore, we do best when surrounded by materials that are similar to what we evolved in. Coupled with that approach is the higher standards expected of today's house in terms of seismic stability, fire safety, acoustical attenuation, acoustical quality, indoor air quality, low maintenance, and energy efficiency. This house attempts to blend those two approaches.

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