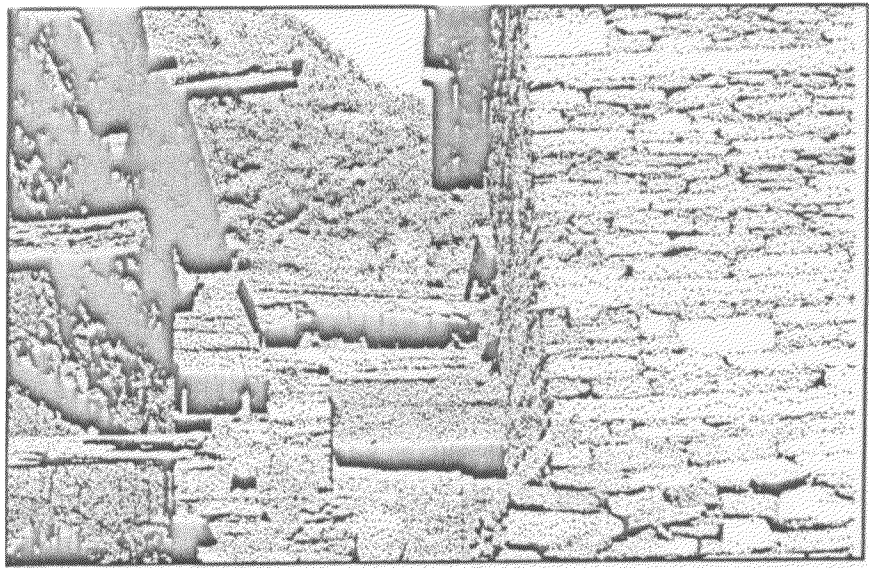
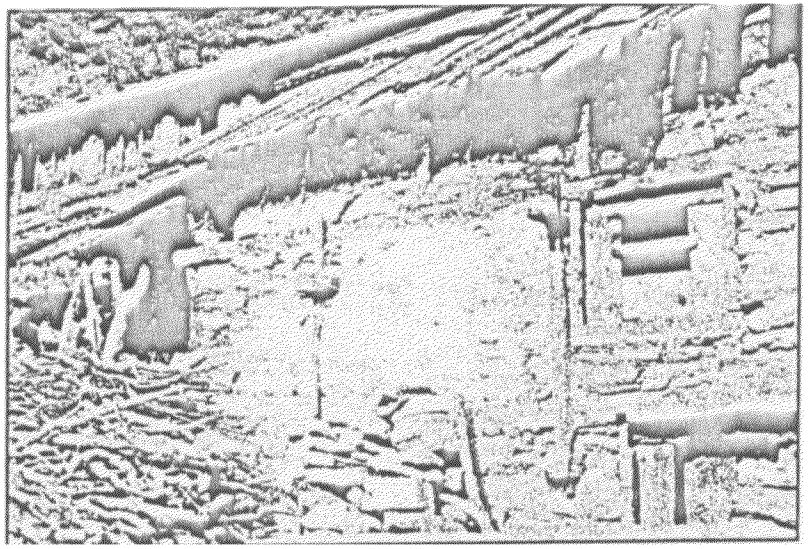
BUILDINGS THAT SURVIVED

An excellent example of timber framing at four levels along the length and width of walls. The dry-stone masonry enables local adjustment of stones during minor seismic shocks. The timber roof cladding loads the structure lighter than slate and insulates better.



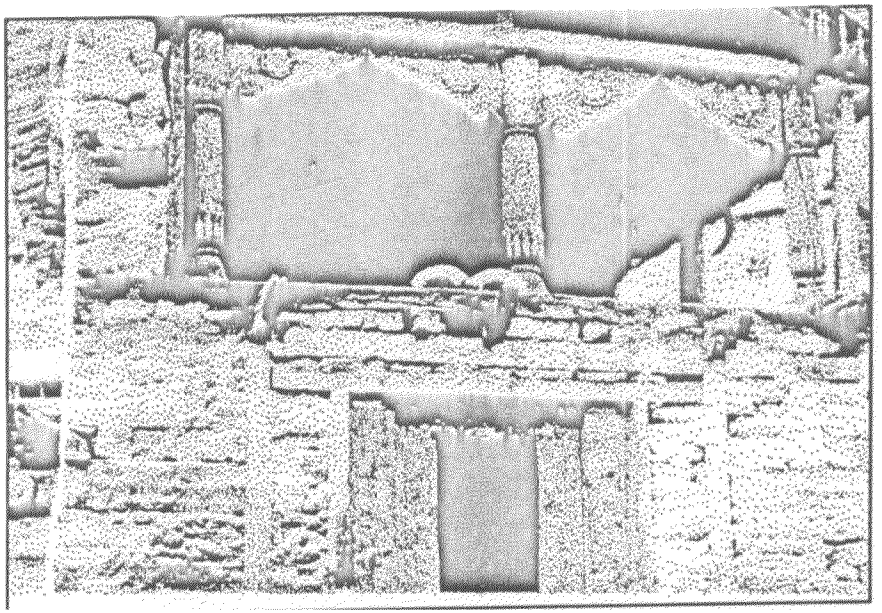
A timber framed building in dry-stone masonry that survived undamaged: Village Sukki, Bhatwari Tahsil, Uttarkashi District.



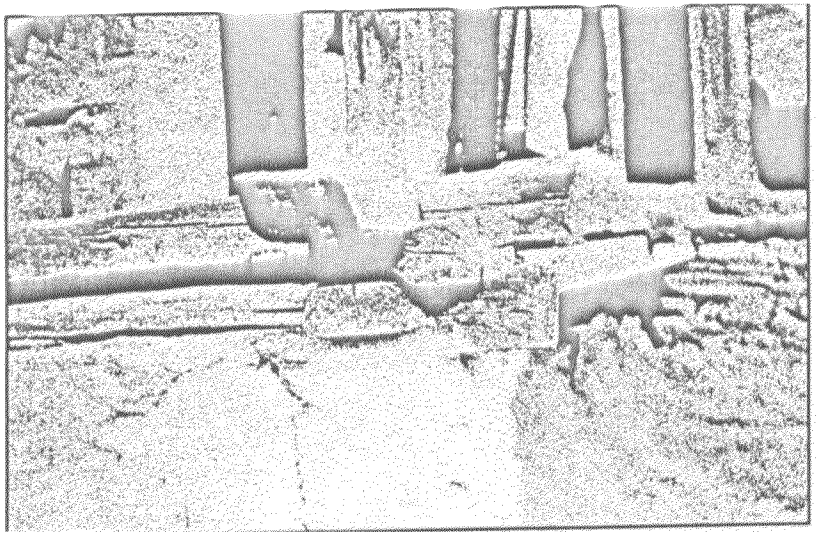
Timber tie beams and reinforcement to contain wall buckling. Village Sukki, Bhatwari Tahsil, Uttarkashi District

Typical detail of timber reinforcement at intermediate floor level and lintel level along the whole length and width of the wall. Note the heavy framing of centrally located openings and the heavy wall plate below the timber roof. Also note vertical reinforcement to contain buckling of long walls. The bulk of the stone masonry used in this wall is of long stones that enable good through and corner bonding. Buildings with this type of construction have suffered little damage due to lateral forces. Most of the damage has been due to settlement. The advantage of timber reinforcement is that failures (e.g local buckling) are contained to small segments that can then be underpinned and reconstructed.

This temple has survived relatively undamaged due to the extensive timber framing and the use of long stones in masonry. The constraint for future reconstruction of buildings using this technique is the availability of seasoned timber. "Chir" Pine forests and in some cases Deodar forests are located close to a number of villages where timber is used in traditional construction. Theses forest fall under the jurisdiction of the Forest Department, which is not releasing timber for local people's use. The villagers have a traditional right to timber once every generation, which they claim should be released to them now. In addition, a massive afforestation drive should be launched to grow the timber that is made available for reconstruction.



Detail of a lightly damaged timber framed temple, Village Sukki, Bhatwari Tahsil, Uttarkashi District



Detail of timber framing at intermediate floor level connecting both horizontal and vertical members. Village Hurri, Bhatwari Tahsil, Uttarkashi District

A close-up of timber framing at intermediate floor level showing the joinery and connections between horizontal and vertical members. Timber bracing enabled this house to survive the earthquake with minor damage.