

Restoring Damaged Buildings in Kashmir

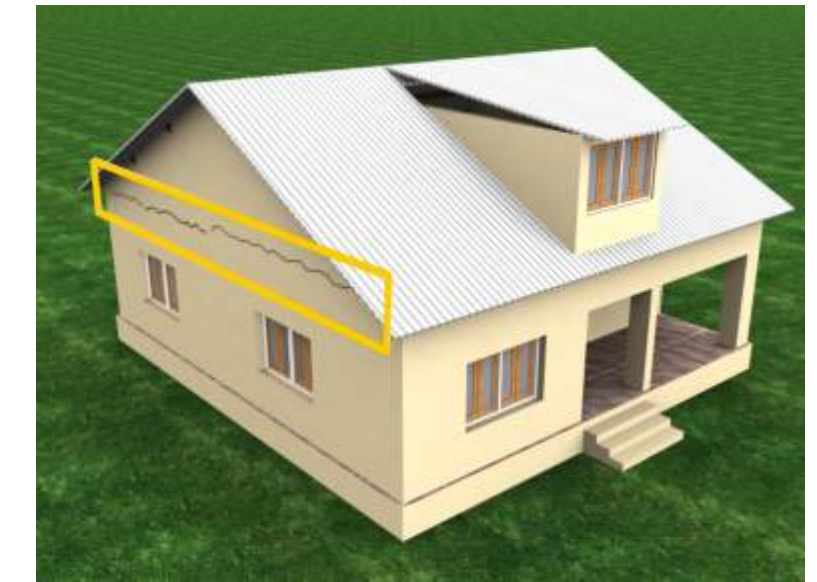
Earthquake shaking causes tension in masonry wall. Since masonry is weak in tension it gets damaged. This ranges from very fine cracks to wider and deeper cracks, partial collapse and finally, total collapse.



Vertical cracks at room corners and in middle of long or tall walls



Diagonal cracks in walls and from corners of opening



Horizontal crack at gable base

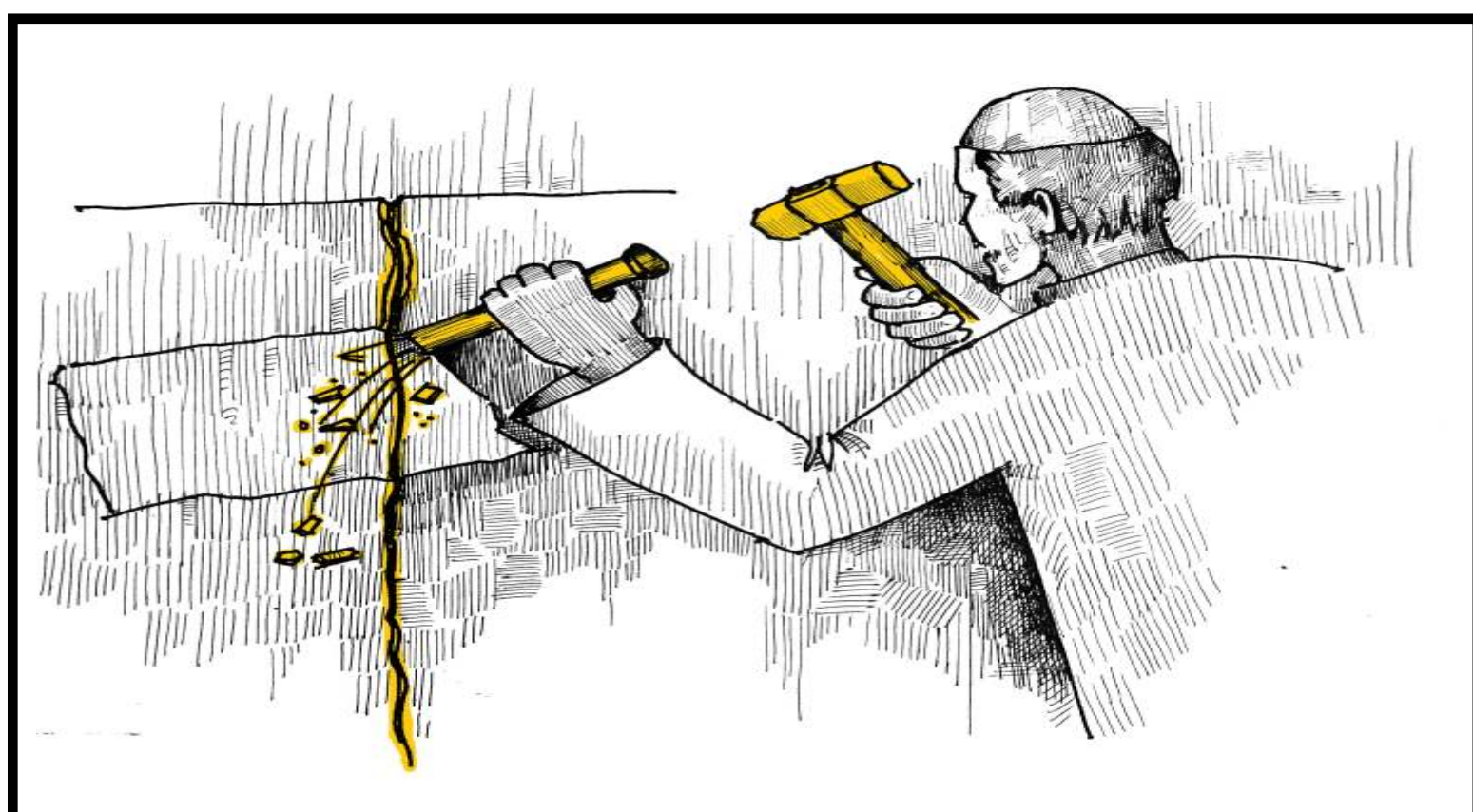
Severity of damage

- Grade G-1 : Thin Hairline crack in plaster
- Grade G-2 : Structural Crack up to 5mm (1/4") wide
- Grade G-3 : Structural crack 6mm to 10mm (1/4" to 1/2") wide



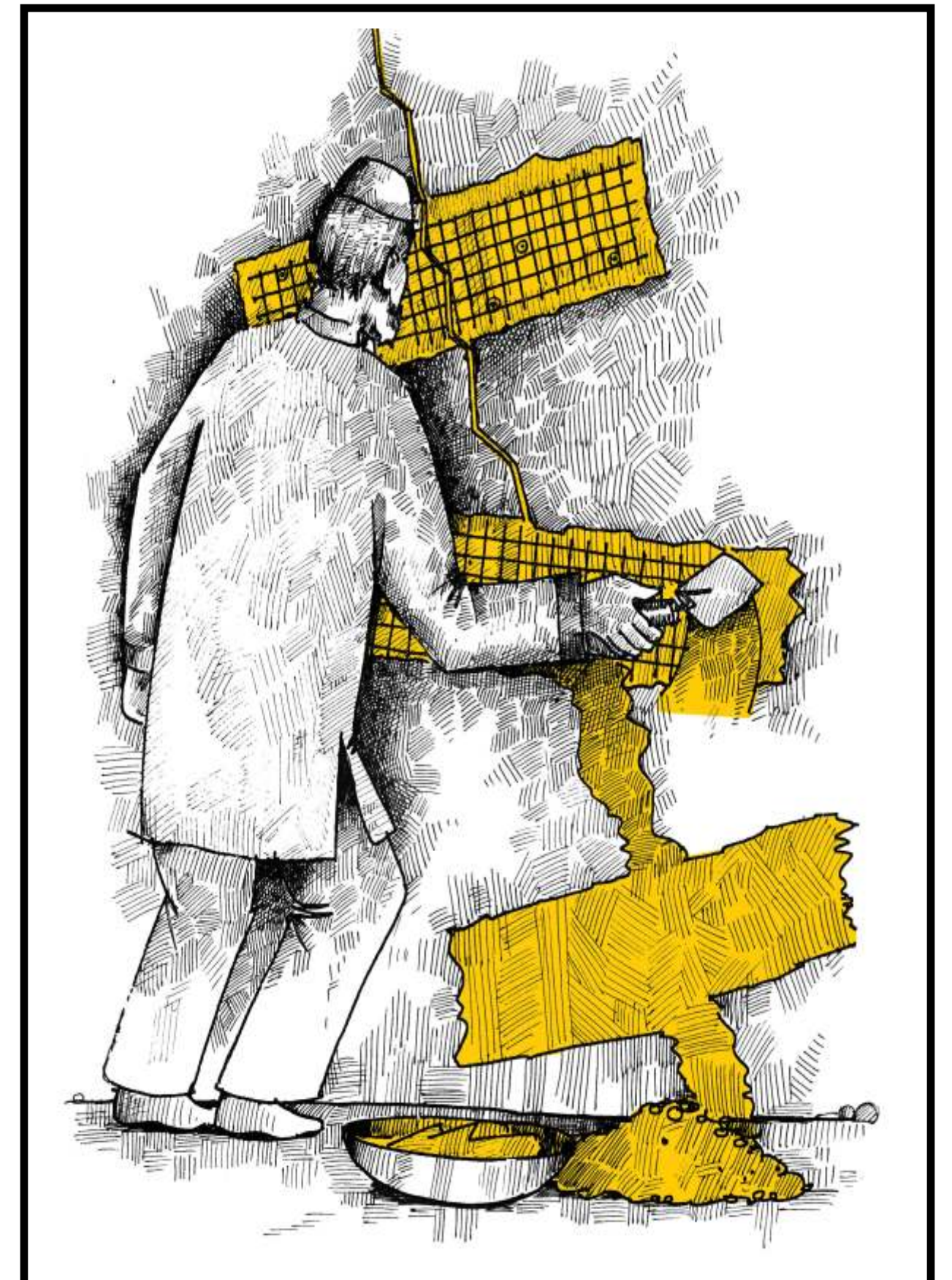
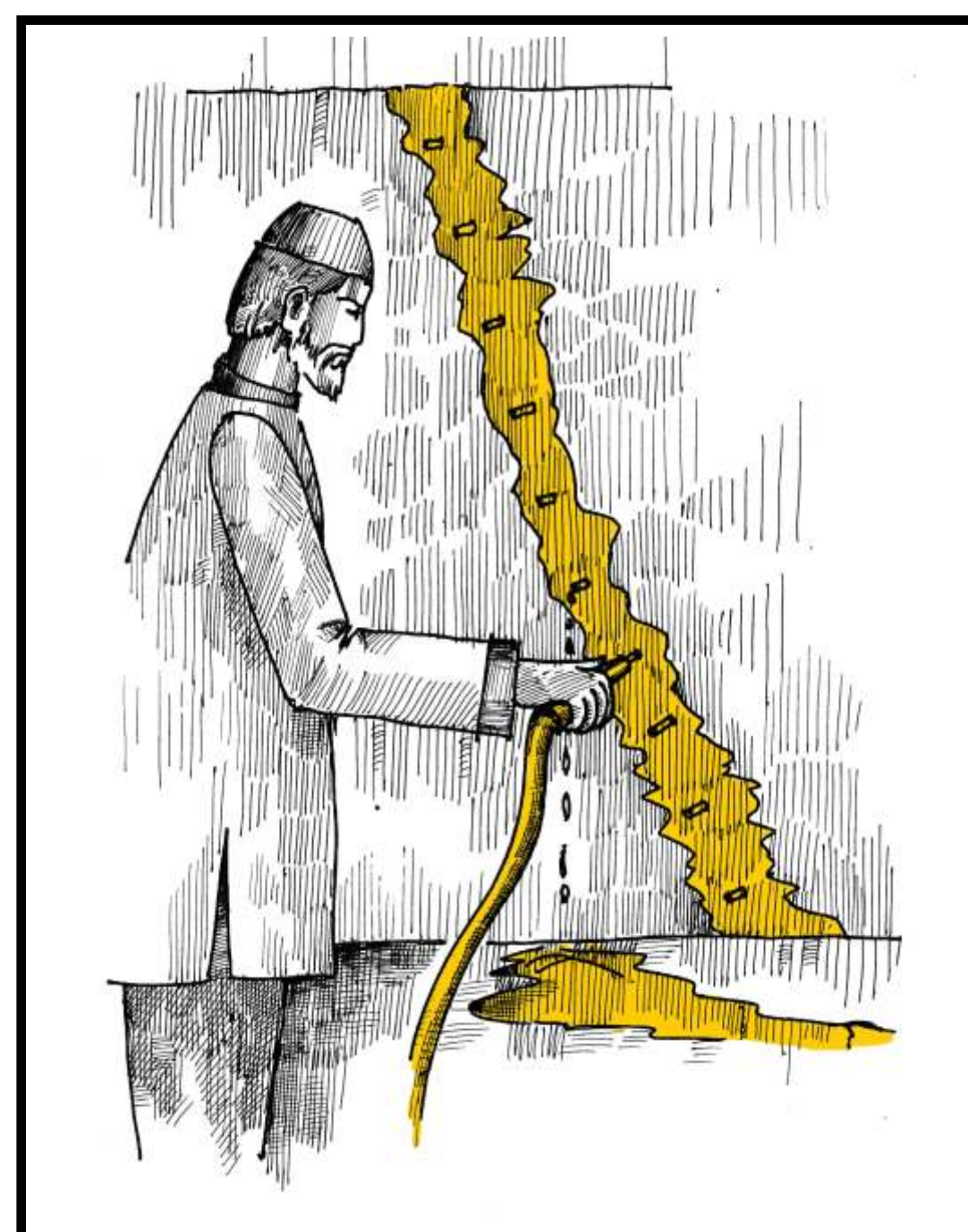
Cracks at floor and ridge beam support

Restoration Procedures for Different Grade Damage



Grade G-1: Sealing cracks (1) Make a 'V' notch along the crack, (2) seal it with mortar.

Grade G-2 & G-3 : Sealing & Grouting crack
 (1) Make a 'V' notch along the crack & install nipples. (2) Seal crack with cement mortar. (3) Through nipples grout the crack with cement slurry.



Grade G-3 : Sealing and Splicing cracks (1) Make a 'V' notch along the crack and seal it with cement mortar. (2) Install galvanized iron welded wire mesh across the crack. (3) Apply cement plaster over mesh.

All restored structures must be retrofitted to reduce risk of future earthquake



Building Materials & Technology Promotion Council (BMTPC)
 Government of India, New Delhi

Technical Support by: National Centre For People's - Action In Disaster Preparedness (NCPDP)