Pakistan Building Code (Seismic Provisions 2007)

Chapter 3: Site Considerations — Advanced Professional Interpretation

Purpose of Chapter 3

Chapter 3 addresses geotechnical hazards that can severely amplify earthquake damage. While structural design ensures building strength, poor site conditions can still lead to catastrophic failure. This chapter therefore focuses on hazard identification and site suitability.

1. Scope — Engineering Importance

The code requires site selection to consider:

- Local geology and stratigraphy
- Distance from causative faults
- Liquefaction potential
- Landslide and slope instability
- Sensitive clay behavior

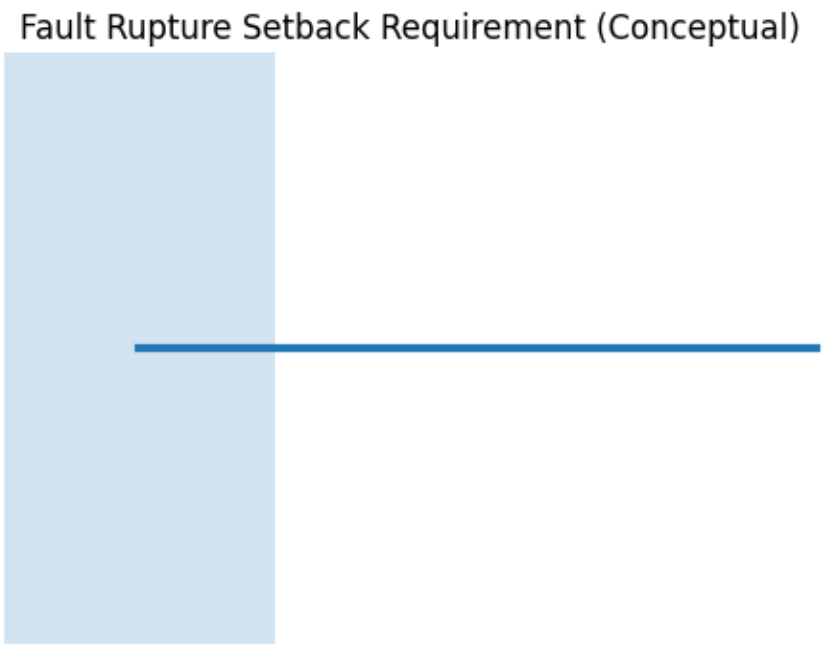
Professional Insight: Many earthquake failures in Pakistan (including 2005) were driven by site effects rather than purely structural weakness.

2. Potential Fault Rupture Hazard

Important buildings should not be located within approximately 200 meters of an active fault.

Technical Reason: Surface fault rupture can produce permanent ground offsets that no conventional building can safely resist.

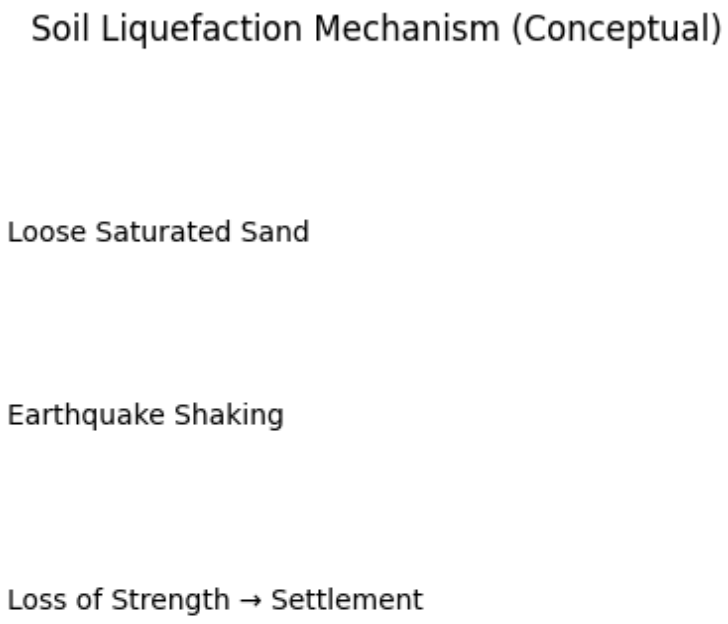
Active Fault Trace



3. Liquefaction Potential — Deep Technical View

Sites underlain by potentially liquefiable soils require detailed geotechnical investigation.

During strong shaking, loose saturated sands may temporarily lose shear strength and behave like a fluid, causing sudden settlement, bearing failure, lateral spreading, and foundation tilting.



4. Landslide and Slope Instability

Buildings on or near slopes must undergo slope stability evaluation using established analytical methods. Failure to evaluate slope stability can result in progressive ground failure even when the structure itself is well designed.

5. Sensitive Clays

Sites containing sensitive clays require detailed geotechnical investigation and appropriate mitigation measures. Designers must coordinate closely with geotechnical engineers when such soils are suspected.